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**An Investigation of the Contribution  
School Information Systems Make to  
Teaching and Learning**

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**Education Doctoral Thesis**

**University of Sussex**

**2010**

I hereby declare that this thesis has not been and will not be, submitted in whole or in part to another University for the award of any other degree.

| Signature:.....

## PREFACE

## Acknowledgements

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Much of the content of this thesis is centred on the education system in the Bailiwick of Guernsey. I am so grateful to the Guernsey Director of Education for his support, as well as to colleagues in the Education Department particularly Mr. Rob Couch for his participation, and to the many headteachers, teachers and administrators that have also taken part in and been interested to know how it is progressing.

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UNIVERSITY OF SUSSEX

LESLEY WEBB EDUCATION DOCTORATE

AN INVESTIGATION OF THE CONTRIBUTION  
SCHOOL INFORMATION MANAGEMENT SYSTEMS MAKE TO  
TEACHING AND LEARNING

SUMMARY

This thesis presents an investigation of the contribution school information management systems make to teaching and learning based on qualitative and quantitative research in the Bailiwick of Guernsey in the Channel Islands. addressed the question of whether information systems contribute to teaching and learning and to the mission of the school; to what extent their adoption forms part of an emphasis on performativity and school improvement or on the transformation of the teaching and learning agenda. In the course of the research a further question was posed which sought to identify how practice in this area could be improved to support teaching and learning better.

The research built on a critical analytical study which took the form of a Systematic Review of the literature. Initial research drew on data from a sample of Guernsey teachers, an Education Department manager and the Director of the company that produces the Schools Information Management System. This was followed by a collaborative action research project in one school involving the Headteacher, the Senior Leadership Team, other Teachers, Students, Administrative Staff and Parents/Carers. Consistent with this approach the position adopted by the researcher was non-neutral: she does not control environment and knowledge was constructed along with those that participated in the research.

Whilst the technology had been the starting point for the enquiry, as the research progressed the wider issues surrounding the technology, such as the alliance of systems with a performative culture in education, came to the fore. The Guernsey context provided a foil to a performative education culture. The benefits of information management systems have to be negotiated and cannot be taken for granted. The development of these systems may have originated from a desire to simplify school processes such as reporting to parents, but they are now complex integrated systems with a development timetable that echoes government demands for data extraction from schools. This developmental focus on a government agenda has implications for the volume of system change which in turn has implications for the ease of use by teachers. The research suggests that systems do support teaching and learning but to a very small degree. Their usefulness will only increase: if they are developed with a teaching and learning agenda in mind rather than for governmental data extraction; if they are supported by technologists that understand education rather than just technology; if teachers and learners are more involved in their development.

The research findings emphasise the importance of context in any investigation of education information systems. School leadership is significant in determining whether such systems contribute to teaching and learning. Teachers need contextualised training in small chunks if they are to learn the systems and thus derive benefit. Parents/carers want reports from the system which inform them how their children's learning is progressing. In some cases students find the information derived from the systems supportive, but in other cases they find the data held are inaccurate and unsupportive. School administrators are engaged in the process of making the systems work and supporting teachers as they learn the systems. This has implications for the status and workload of these staff.

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## **PART 1: SETTING THE CONTEXT**

### **Chapter 1 Introduction**

English and international education policy over the last 20 years has seen an emphasis on performativity (Blackmore, 1997; James, 2000; Ball, 2001; Fielding, 2001; Jefferey, 2002) with information systems seen as a part of that culture. As discussed in more detail on page 128 performativity suggests a focus on outcomes and what can be measured. It offers a narrow definition of a 'successful' school. This research provides an alternative view, suggesting that information systems may support schools in their work but with the emphasis on teaching and learning, the focus on students and teachers. The contextual location of the project in Guernsey is a significant feature of the research.

For more than 18 years I have been working in or with schools, supporting their use of Information Management Systems. My role has been to encourage colleagues to learn how to use these tools and to implement them into their daily routines. Over the years I have wondered, should they be doing this? Where is the empirical evidence that what I am asking them to do is actually going to make any difference to children or to them as teaching professionals? Intuitively I believe that using a school information system will empower school colleagues to reduce duplication of effort and help to identify gaps in pupil knowledge, or even gaps in teaching practice. Using a system will not plug such gaps, but their identification may be a starting place for working towards that. I want to "acknowledge the manifold contribution of the teaching profession" (Mulford, 2005, p. 322) and so my enquiries are directed at producing evidence which may contribute to teaching and learning.

My own experience has been unique because I have worked in both the English Education environment and the Education Department in Guernsey, Channel

Islands. My observations of the differences as well as the similarities between these two environments have shaped my research.

### ***My Research Journey***

When I began programme with the University of Sussex I had very fixed ideas of what I wanted to achieve. I expected to produce research that was able to prove categorically that using an information system was beneficial to schools and it was simply a matter of them learning which buttons to push. School improvement seemed to be about following recipes for success and I wanted to help schools by providing such a recipe. As the doctoral programme evolved, I learned from my reading and my interactions with both fellow students and tutors, that this was a somewhat simplistic view. My own view of research was that it was based on quantitative knowledge, lots of facts and figures and questionnaires to analyse. I had to learn that not only were there other possible methods, that people's voices and histories could be included in research, that it might be based on observations not number crunching, but crucially that other colleagues found these methods more empathetic and enlightening than my positivist 'hard facts' approach. I also had to learn that assumptions are constructs and it is unwise to fall back on 'taken for granted' assumptions and ideas.

I had initially expected to produce research that showed conclusively that using a management information system in schools could directly lead to improved learning outcomes (for students, teachers, school leaders and school administrators) which could be measured and quantified. However, my own learning path zigged and zagged in directions that I had not expected.

It was suggested that I approached the research by undertaking an action research project, looking at only one school, getting up close and personal. That would certainly take me out of my comfort zone and I had to reflect on whether I could meet this challenge. I felt unsure of my ground but also realized that if I was to grow as a researcher I would need to undertake different kinds of research.

***School Information Systems***

School Information Systems are computerised database systems which provide varied functionality such as pupil and teacher basic data records, assessment and reporting facilities, timetable and examination management, pupil registration and management of other school business processes. As an ICT professional with a brief to support schools in their use of these systems, I wanted to undertake this research in a bid to improve my professional practice. I have seen systems evolve from simple databases to complex information management systems and have been employed to actively support and encourage schools as they struggle to learn the systems and get value from the time and money expended upon them.

These systems are currently of interest to the English National Government, which uses them to mine data from schools to provide evidence in support of national education policy. Becta (2005b) surveyed local authorities to investigate what value for money is afforded by such systems and how they can be made more accessible by offering interoperability with other systems. As a local authority employee tasked with supporting schools' use of information systems I responded to the survey.

***A Systematic Review of the Literature***

I undertook a systematic review of the literature (Appendix 1) to shape my research questions; I reviewed 97 texts of which 11 that met my criteria, a further 5 were added at a later sweep. The included studies are shown in Table 1. Despite Hammersley's (2001) concerns about systematic reviews being based on quantitative methodological studies, the range of methodologies is more than one-dimensional. Included in the review were: quantitative studies; case studies; action research, ethnographic studies, and synthesis of research. The studies appear in books or journals or conference proceedings or on websites.

<b>Study</b>	<b>Location</b>	<b>Focus</b>
Doornekamp Gerard, and Drent, Marjolein (2001) A Case Study of ICT and School Improvement at Bassischool	The Netherlands	A single school study
Isdale, Lindy(1999) 'Switch Bitches' and system glitches: How do computers change the work of school 'office girls'?	Australia	A single school study
Isdale, Lindy (1996) Working with information systems in school Administrations	Australia	A Conference Paper presenting Ethnographic research in two primary schools
Natrins, Lesley (2004) IT Can make a difference if IT is fit for Purpose	England	15 Case Studies in the Post 16 environment
Strickley, Alan (2004) Factors affecting the use of MIS as a tool for informing and evaluating teaching and learning in schools	England	A survey sent to 166 Primary schools
Telem, Moshe and Pinto, Sherly (2001) Information technology's impact on school - parents and parents-student interrelations: a case study	Israel	A single school study
Visscher, Adrie, Wild, Phil, Smith, Debbie and Newton, Len (2003), Evaluation of the implementation, use and effects of a computerised management information system in English Secondary Schools	England	A questionnaire sent to 1000 Secondary School staff
Visscher, Adrie, and Wild, Phil (1997) The potential of information technology in support of teachers and educational managers managing their work environment	England	A synthesis of existing research
Vlug, Karin F. M (1997) Because every pupil counts: the success of the pupil monitoring system in the Netherlands	The Netherlands	A case study of a pupil monitoring system purchased by 80% of schools
Walsh, Ken (2002) ICT's about Learning: School leadership and the effective integration of information and communications technology	England	Interviews with Headteachers and System Managers in several pathfinder English schools
Wild, Phil and Walker, John (2001) The Commercially Developed SIMS from a Humble Beginning	England	A questionnaire sent to 25% of English Secondary schools
Adiguzel, Tufan, Vannest, Kimberley J &	USA	A literature review on

Zellner, Ronald D (2009) The Use and Efficacy of Handheld Computers for School-Based Data Collection: A Literature Review		the implementation of hand held computers in schools.
Bisaso, R, Kereteletswe, O, Selwood, I & Visscher, A (2008) The use of information Technology for educational management in Uganda and Botswana	Botswana and Uganda	A questionnaire sent to 55 schools in Uganda and to 5 Ministry of Education offices in Botswana.
Bosker, Branderhorst, J E and Visscher, A. J.(2007) Improving the Utilisation of Management Information Systems in Secondary Schools	The Netherlands	A questionnaire sent to school principals, followed up by interviews.
Demir, Kamile (2006) School Mangement Information Systems in Primary Schools	Turkey	A questionnaire sent to 98 elementary schools.
Tolley, Hilary & Shulruf, Boaz (2009) From data to knowledge: The interaction between data management systems in educational institutions and the delivery of quality education	New Zealand	A model for how schools collect and transform data using Education Management Information Systems.

Table 1 Studies included in the Systematic Review

Studies investigated the manner in which systems were devised and implemented, and how personnel were trained. Some compared national investment in ICT programs with learning outcomes at specific key stages. However I was unable to find any studies that looked at School Information Systems from the point of view of the contribution they make to teaching and learning. It is the gap in the literature that warrants my own research.

### ***The Findings of the Systematic Review***

#### ***Achievement needs to be linked to feedback***

The National Teacher Research Panel considers that data can be effective in supporting teaching practice if used creatively and critically. Green (2000) suggests that data should be made available to students as fully and as quickly as possible. Ofsted (2003) reports that learners value feedback and discussion about their progress, and parents' value well written reports and regular consultation.



### ***Administrators are often the experts***

A study of school leadership in England found less than 70% of Headteachers, less than 60% of Deputies and less than 40% of Middle Managers use management information systems (MORI accessed 2005). There is both a gender and a school sector split, more male managers and more secondary school managers using an information system. The ICT in Schools Survey 2004 claims that over 90% of school leaders use ICT for management and administration, but only 50-60% of teachers use it in this way. Nolan et al. (2001) see this location of information systems expertise in the administrator as being due to one of three possible causes. A desire for control and power on the part of the administrator, a misunderstanding of the use teachers could make of the systems for teaching and learning or the difficulties of providing access given the existing design of network systems. The concept of power retention in schools, echoed by Strickley (2004), is at odds with Isdale's (1996, 1999) reading of the administrators as those with the least power.

### ***School culture and context are significant***

Fullan (2003) says that context is probably more important than either the background or the people involved in a situation. Fink (2000) concurs, explaining that any attempt to effect change that ignores the school and teacher context, is doomed to failure. Petrides & Guiney (2002) suggest the school culture is significant in influencing the extent to which a management information system can be tamed. If the school culture does not view data in a computer system as beneficial, then the data will not be relied upon. Gipson (2003) agrees that each school has a unique culture that should be celebrated, but believes schools need to become more tightly coupled so that teaching and learning is placed as their central purpose.

Visscher & Wild (1997) allude to this importance of context when they suggest that no single feature of information systems can completely account for how a system

will be used and what impact it might have. It is a mélange of these variables that will be determinate.

***The concept of learning outcomes is fraught and complex***

International Education Ministers have suggested that a focus on learning outcomes requires measurable education standards (OECD accessed 2/05). They consider that information on the quality of learning outcomes should be provided and such transparency of information will provide a lever to improve educational performance. Sergiovanni (2001) counters this, finding it an elevation of technocracy over democracy. Reliance on measurement will inhibit the development of schools that have character. This institutional link between learning outcome and performance is problematic. The move to self-managing schools has led to an increased emphasis on performance, which in turn has led to greater anxiety for teachers as they struggle to meet government and social demands Blackmore (1997). She finds this ironic, given that research suggests that learning outcomes are the result of a broad range of different factors, of which student and teacher interactions are the most important. Mulford (2003) asks whether performance driven procedures actually lead to an enhancement of valued learning outcomes, his emphasis focusing on value not performance.

***Schools are not benefiting from the system***

The ICT in Schools Survey 2004 found that the average expenditure per pupil on ICT in schools ranges from £69 in primary schools, £91 in secondary schools to £297 in special schools. Whilst only a proportion of that spend will be on a management information system, nonetheless this represents a significant chunk of a school budget and the figure is rising each year.

Why are schools not benefiting from computer systems? Is it the design of the systems that precludes effective use? Is it a lack of effective training and support? The constant development, which as Isdale (1996) re-counts requires schools to continually update skills in order to keep up with the system? Nolan et al. (2001)

consider this frequent development of the New Zealand information system MUSAC, to be a feature of the system. If schools are not benefiting from the systems who is? Is it the software developers (who are paid to create software), the Local Education Authorities (who may be footing the bill for the use of the software) or governments (who are using the software to extract data, to be used in defense of educational policy).

***The whole school needs to own the system***

The system should not be seen only as a tool for managers. In order for schools to maximise their investment (both financial and in terms of people hours) in information systems, systems need to be seen as relevant to the whole school. Where systems are successful teachers are using them frequently and parents perceive the system outputs as high quality

The examples provided by Telem & Pinto (2001) or Doornekamp & Drent (2001) offer a vision of information systems being used effectively, supporting teaching and learning and empowering families. Natrins (2004) also offers an optimistic image of systems use in education. However there does not appear to be much published research that supports these views. This has implications for government policy and for educational research.

It could be argued that schools that use information systems successfully are more effective, but effective is a non-neutral term. The concept of an effective school is a social construct (Riley & MacBeath, 2003). The essential question is what are management information systems supposed to be doing? Is it providing information for learners, for teachers, for education authorities, or for governments? Is it for the production of data i.e. hard system information, or is it for the support of teaching and learning i.e. soft system information?

### ***Data needs to be trustworthy***

Strickley (2004) found that schools are not using the information system as an organic alerts system but as a data repository. Yet the example provided by Telem & Pinto (2001) indicates that the system can be used exactly as an organic alerts system. If schools are maintaining dual systems as reported by Isdale (1996, 1999), or Bosker (2007) then it will be difficult for them to rely on either system, as there will be no guarantee of which is accurate and up to date. Green (2000) considers it essential that schools collect hard data to balance the qualitative information that is available. Data need to be accurate, current and used daily, to be relied upon by school staff i.e. embedded as Gipson (2003) describes. This is echoed in the findings of Kirkup, Sizmur, Sturman & Lewis (2005) who suggest the effective use of data depends on promptness, accessibility, manageability and time for interpretation. Thorn (2002) also agrees that data reliability and validity are important. He contrasts the provision of data for macro decision making at a district level with the requirement of data at the micro level, focused on teaching and learning.

### ***National government requirements force reactive system development***

Systems have been reactive to central government dictat, Becta (2006b) canvassed Local Education Authorities on their schools use of systems and this issue was flagged as a concern. Wild & Walker (2001) believe this reaction to government demands impedes the future development of information systems. The software supplier SIMS has confirmed this, Smith & Wild (2001), saying that it has to comply with Government dictated school information returns and therefore directs most of the system development to this area. Central government deploys taxpayer's money to local education authorities and then to schools, but it is locally managed schools that decide to purchase systems and take funds from other school projects to finance them. Therefore the schools' requirements should take precedence over the need for government returns but this does not appear to happen in reality.

***Not all the system capacity is being used***

Studies by Strickley (2004) indicate that management information systems offer functionality that schools are not able to use. Wild & Walker (2001) list the modular functionality offered by systems, but do not offer any insights into why such functionality is underused. The importance of training and support is emphasized (Bosker et al., 2007; Biaso et al., 2008). Demir (2006) suggests it is due to lack of involvement in the decision to implement systems.

***Systems need to be easy to use***

Adiguzel et al. (2009) claim it is ease of use, usefulness, subjective norms, intention to use and dependability that will determine system usage. Until recently the systems were accessible only whilst on school premises. This means that learning the system has had to fit into an already busy school day. The evolution of systems was based on ad-hoc development by IT staff; many of who were not trained systems developers claim Wild & Walker (2001). Their lack of ICT expertise may have hampered development, producing systems that were somewhat amateur.

***The benefits of systems need to be interpreted***

The technocratic view of information systems, which imply that knowledge management can be reduced down to a software solution contrasts with the social construct perspective, which sees knowledge management “as the result of interactions between stakeholders” (Sallis & Jones, 2002, p32).

Vlug (1997) perceives information systems as having the potential to improve pedagogical practice and enhance learning, yet few teachers view information systems in this way. Telem (1996) proposes a phenomenological approach drawing school staff attention to the importance of the system for them. He notes that the possibility exists of resistors of information systems but considers this can be overcome. Alternative viewpoints are a necessary feature of democratic schools, maintaining the status quo is unhealthy. Consensus on the perceived

benefits of information systems needs to be negotiated, with an honest analysis of all the variables including the value negative ones, so that an accurate picture can emerge to inform decision making.

***There are not enough experts in management information systems***

Gipson (2003) cites a general teacher shortage as one variable that could impact on the number of experts available in schools. Headteachers struggle in some areas to recruit any teachers let alone those with specific ICT skills. This shortage will compound the lack of embedded use of information systems. Wild & Walker (2001) claim that early implementation teams contained teachers and certainly the SIMS suite was initially developed by a combination of former teacher and Local Education Authority staff. What constitutes an expert in management information systems? Can teachers be experts in this area alongside their existing duties? Nolan (2001) describes the development of MUSAC in New Zealand as a joint enterprise between developers and customers so that end user resolutions to problems could be included in software development. Thus expertise is a fusion of ICT skills and teaching skills.

Managers of ICT support teams may have a bias towards recruiting those with technology skills and qualifications, rather than knowledge of teaching and learning. There could be a role for universities and colleges in designing courses which blend the two skill sets so that schools can recruit appropriately skilled personnel. There is also a value here in re-defining the kind of staff schools need in the way Walsh (2002) describes, so that a broader range of skills are deployed.

***Whole school networks are needed***

Demir (2006) and Biaso et al. (2008) note the importance of infrastructure in the adoption of systems. The ICT in Schools Survey 2004 distinguishes the number of computers used for management and administration from the number used for teaching and learning, confirming the stereotype that information systems are for school administration not for supporting teaching and learning. The study found

only 55% of primary schools and 68% of secondary schools had networks that integrated curriculum and management functions. It is only when teachers have immediate access to the information system that they can begin to engage with it regularly and integrate it into their pedagogy.

### ***Change Management***

Dias et al. (2001) depict the process of change and educational development as being closely connected to the amount of participation that social actors are allowed in effecting the change. Ramos (2001) echoes this viewpoint, if change is imposed teachers will resist, if they are involved in the change they will gradually work with it, Demir (2006) concurs. Change which fails to take into account context, is unlikely to succeed (Fink, 2000). The OECD cite the success criteria of any ICT projects as being related to their compatibility with teachers existing norms and beliefs, with the context in which the change happens and with the support teachers receive as the change takes place (Venezsky & Davis, 2002).

Change management is an art not a science, schools need to evolve over time with support. Sometimes external variables such as budget, policy, technology or politics force change at an inappropriate pace and with insufficient regard for the core values of the organisation or the people affected by the change. When this happens the change is less likely to be successful and will be either resisted actively or ignored passively.

Many change programs that failed probably did so because they ignored cultural forces in organizations (Schein, 1990). The existing values held by teachers will be based around their concern for the welfare of their pupils, a concern for their own workload and a concern for the role of the school in the community. Using an information system should add some value to teaching and learning or the implied systemic change cannot be justified and will fail to be accomplished.

### ***Information can empower***

Schools need to move from data collection as an exercise to information transformed into knowledge as a process (Tolley & Shulruf, 2009). This transformation can have a real impact on learners resulting in better decision-making by schools and facilitating personalised learning (Gipson, 2003; Petrides & Guiney, 2002). It is not just a case of having the data but of using it imaginatively and motivationally (Sergiovanni, 2001) using it productively (Sallis & Jones, 2002).

The social construct perspective sees knowledge as a creation that springs from exchanges between social actors. The knowledge held in a school information system could be constructed in a variety of ways, and various interpretations of this knowledge are possible. Empowerment of one social group may lead to the disempowerment of another group (Telem & Pinto, 2004).

### ***Leadership is crucial***

Leadership theory has evolved over many years, leaders were born (trait) (Horner, 2003; Bryman, 1999) or leaders responded to situations they found themselves in as well as their predisposed behaviours and traits (contingency theory) (ibid). Leaders must adapt to change and manage an organisational culture. They need to be assessed in terms of the motivation of their followers. They should move from transactional leadership, which relates to their own power, to transformational leadership, which relates to them motivating their followers. Is it possible for one person to be the leader? Should leadership now be distributed, not vested in one individual? Perhaps most importantly for schools, should leaders become the facilitators of leadership in others (Horner, 2003).

Rutherford (2005) suggests that school leadership makes a bigger difference to academic standards than has been previously considered. The EPPI center review of 2003 also suggested effective school leadership impacts on student outcomes but that it is an indirect impact, which occurs as a result of intermediate factors such as teaching staff, the school organisation and parent and community



relationships. The review also claims that it is distributed leadership that will have an effect on student outcomes. Bush (2005) contests these findings, citing studies that do not confirm clear causal links between leadership and student outcomes. Mulford (2003) cautions against seeing Leadership as a defined and static state, what works in one context may not be replicable in a different context. Levačić, (2005) goes further, asking whether it is even possible to conclude causal relationships from empirical observations.

### **Training and support are crucial with a focus on education issues**

Green (2000) advises that to get the maximum benefit from ICT, schools should spend the same amount of money on training as was spent on the purchase of the equipment. The ICT in Schools Survey 2004 found that 73% of secondary schools teachers had received professional development in ICT-related practice, and that this figure varied greatly depending on whether the school perceived itself as e-confident. Fung & Ledesma (2001) concur, their analysis of an information system in Hong Kong schools reports that training, whilst seen as an important task, was expensive in both cost and time for school staff.

Telem (1996) argues that more training and support will result in better staff approval of the system Chatzilacos et al. (2001) report the benefits of training when implementing ICT projects in schools. Whilst training is required it needs to be of a sufficient quality and type to benefit schools. The New Opportunities Fund invested £230 million for the training of teachers in ICT skills, yet this investment has failed to produce real innovation in teaching & learning Gipson (2003).

### ***Using a system has a time cost versus benefit***

When considering management information systems, schools and governments need to be realistic about how much time will be devoted to inputs in all their guises, before any benefit will occur. International government pressure on schools to utilise technology to make them more effective has to be justified in terms of realistic expectations of the efficacy provided. It is hard to assess causal links

when we can't go backwards and take the time already expended out of the equation (Levačić, 2005). Contrary to Natrins (2004) findings, I believe that systems suppliers and educational researchers need to be cautious in their claims about the possible time savings offered.

These findings directed my subsequent research in Guernsey. I wanted to ensure the research was focused on teaching and learning rather than on the technology per se. Borrowing from Miles and Huberman (1994) I defined a Graphical Conceptual Framework that sees teaching and learning at the heart of education. Information systems usage forms part of an Education Department policy to be investigated, from Leadership Team; Teacher; Student and Parent perspectives. The role of Software Designers and School Administrators in the process is also of interest.

The framework in figure 1 shows the complex web of interconnected school relationships, demonstrating that School Information Systems cannot be investigated in the context of the technology (as occurred in many of the studies identified in the systematic review) but rather in the context of their contribution to teaching and learning. Critical theory looks to identify whose interests are served by certain circumstances (Cohen et al., 2000); in critical theory terms my research questions ask if it is in the interests of teaching and learning that schools use information systems. Is it a case that these systems are technologies of state control? Or "do they represent a democratization of information and knowledge that have the potential to empower both students and teachers?" Selwyn and Brown, (2000, p. 678).

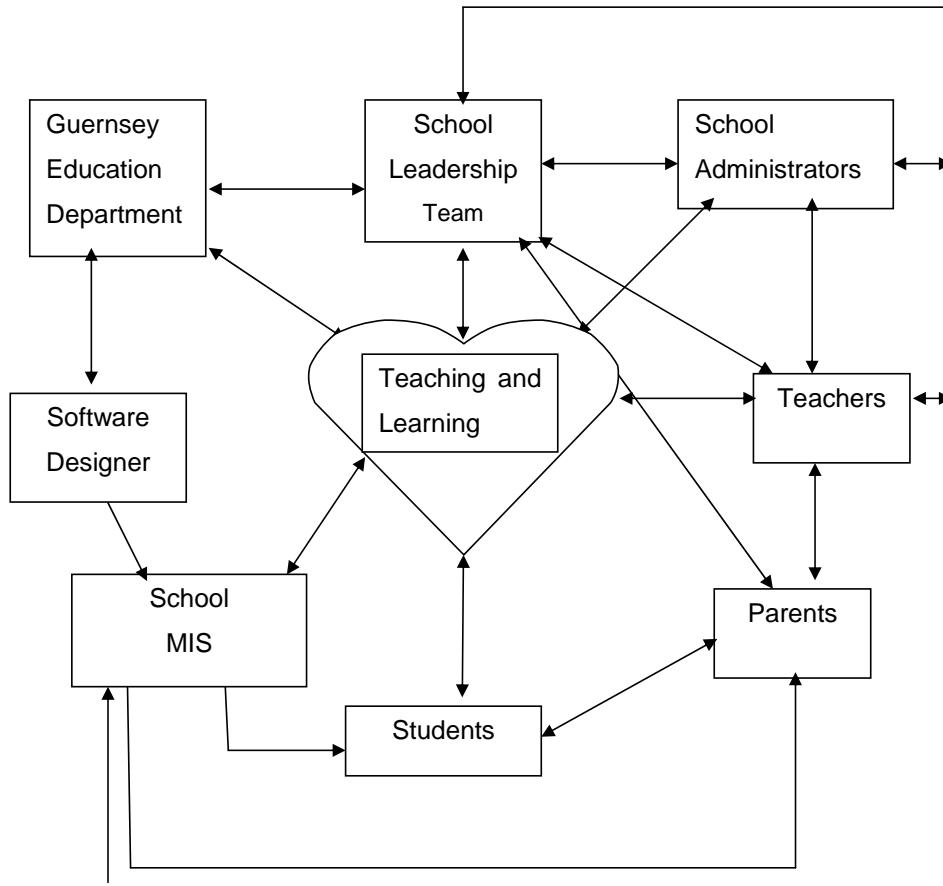


Figure 1 Graphical Conceptual Framework

### **Research Questions**

My research relates to the Bailiwick of Guernsey, I wanted to investigate the following two questions.

**Question 1**

To what extent do school information management systems contribute to teaching and learning?

Are the systems that are implemented fit for purpose and used; are there gender implications in the utility of such systems; does the training and support for such systems impair or aid their adoption?

**Question 2**

How does the way that school information management systems are adopted, developed and used contribute to the mission of the school? To what extent does they form part of an emphasis on: performativity; on school improvement; or form a part of the transformation of the teaching and learning agenda?

Here I wanted to investigate: whether the reliance on ICT is a case of creeping industrial managerialism in schools; whether learning outcomes are a social construct, which reinforce the notion of performativity; whether schools can be viewed in the same context as industry, centres of production with inputs and outputs; whether 'best practice' is useful if taken out of the context in which it occurs; whether 'best practice' is a term of any significance for schools; and how important school leadership is in the management of change in schools.

I will describe how these questions evolved in the following chapters.

***The Guernsey Education Department Context***

The States Education Department of Guernsey has invested heavily in the provision of ICT equipment and software in schools. Every school has a whole school computer network, every teacher has a laptop computer, all schools are wireless enabled so that links to the school network are not constrained by location; schools have always-on fast and filtered broadband connections to the internet, a managed service ensures that the technology is maintained in working order. Coupled with this investment in technology has been an investment in

support for software. An ICT Consultancy provides strategic advice and training for curricular software, and personnel have been employed to support the Schools Information Management System providing a Help Desk, training and strategic advice. This whole Education Authority approach is unlike the English education model. Because there was no Local Management of Schools legislation in Guernsey, schools do not buy back services, these are provided centrally by the Education Department. The move towards decentralisation, devolution and de-regulation described by Ozga (2009) did not happen in the Bailiwick.

The context of teaching and learning also differs. The education department is separate from the Department for Children, Schools, and Families; Guernsey schools are not funded by the DCSF. This means that there is no requirement for schools to follow the English National Curriculum. There are no School Performance tables, parents can opt for their children to undertake the 11 + test at transfer from primary school to secondary school. If successful, pupils can attend the Grammar School. If they are not successful they can attend a local secondary school (there is no freedom to attend any school, catchment areas are carefully defined) or they can pay fees at a local independent school (each of these are single sex schools). This cultural context is discussed later as a significant factor in schools' use of information systems.

In previous years schools in the Bailiwick followed the English National Curriculum so that pupils could move between the two education systems. However in 2005 Guernsey schools abandoned National Curriculum testing at Key Stage 1. Later that same year it was decided that End of Key Stage tests would be abandoned throughout the key stages. From Key Stage 1 to Key Stage 3, assessment is now made through moderated teacher assessment with the emphasis on formative assessment. Pupils sit national examinations at Key Stage 4. Pupil data are collected from the Schools Information Management System to populate the Education Department database. Thus the context of the research is set.

In Chapter 2, I will present the research methodology. In Chapter 3, I will discuss the research findings in relation to teachers. I will then discuss these in relation to students in Chapter 4. From there I will move to looking at the parent perspective in Chapter 5 and the perspective of school leaders in Chapter 6. In Chapter 7, I will present the findings from the school administrator perspective and then reflect on the action research project in Chapter 8. In Chapter 9, I will present a discussion on performativity, technology and school improvement. Finally in Chapter 10, I offer my conclusions which suggest that we all have much to learn and here I pose a third question which I try to answer, how can we improve practice so that information systems do support teaching and learning?

## **Chapter 2 Research Methods and Methodology**

### ***Introduction***

I will now discuss methodology and present the methods used to collect the data, before outlining the methodological problems I encountered.

### ***Methodology***

Dunne et al. (2005, p.163) suggest that methodology could be regarded as “the study of the way that methods are used”. They argue that methodology covers: ontology, epistemology, ethics, macropolitics, micropolitics and practicalities. It provides a mechanism for sharing problems researchers encounter in their own stance. Cassell and Johnson (2006) consider research is based on assumptions about epistemology and ontology. Somekh and Lewin (2005, p. 347) define methodology as the “system of principles, theories and values” that support the researcher’s approach.

Somekh & Lewin (2005) and Cohen et al. (2000) suggest approaches to research that I could have considered including: Grounded theory wherein the purpose of is to generate theory based on data gathered through qualitative research; Feminist methodology wherein critiques assumptions about women and seeks to develop just professional and personal praxis, with voice a central concept; Ethnography which places emphasis on how people interpret their worlds, what they say and do; Case study which tries to “engage with and report the complexity of social activity” (Somekh & Lewin, 2005, p.33) seeing reality as a social construct which it describes then theorises. In my desire to improve my own practice I selected action research, which mixes the development of practice with the generation of knowledge iteratively. There is a rich history of school based action research as described by commentators such as (Adelman,1993; Elliott,1993; or Noffke, 2005).

Masters (1995) describes 3 types of Action Research:

Scientific-Technical; Collaborative/Practical-Deliberative; Critical-Emancipatory.

Kurt Lewin is regarded as an early researcher who coined the term 'Action Research' (Masters, 1995; Noffe & Somekh, 2005). Lewin worked with disadvantaged members of the community in the United States of America during the early 1940s. Seeking an empirical base for his research, his work is categorised in the Scientific-Technical framework (Adelman, 1993). Lewin believed that participants should engage in research, democratically taking part in the plan – act – evaluate iterative cycles he proposed, and that as a result work would be less insignificant for them, and they would be less likely to feel alienated from it. His research was pragmatic in that it was concerned with practice, with outcomes of action. He considered that research could lead to change however he did not critique the environment in which he conducted his research (Adelman, 1993).

Grundy (1994) describes the collaborative nature of action research. She suggests that the collaborative framework recognises the importance of change for the individual and the institution. In the collaborative framework the researcher and practitioner identify issues, causes and possible courses of action. Masters (1995) claims that the collaborative framework facilitates understanding of practice, the resultant changes have greater longevity although they are at risk from displacement as new staff join or existing staff leave the organisation where the research took place.

The Critical-Emancipatory framework of Action Research has evolved particularly through the work of Carr & Kemmis (2005). Influenced by the work of Habermas they consider that it is external power structures that influence the work of teaching Elliott (1993). However teachers can free themselves by reflecting upon how their work is shaped by these structures and by taking part in actions which dismantle them, namely critical discourse. McTaggart (1989) echoes the importance of critique and the political nature of action research. This type of research is emancipatory in that it enables actors to think outside of their everyday assumptions and to embark on 'transformative' action (Carr & Kemmis, 2005,



p.355). Elliott (1993) critiques Carr & Kemmis suggesting their emphasis of the ability of teachers to effect change as a result of reflection is 'naïve'. The research I discuss here took me in a slightly different direction where the transformative actions are closer to the kind of individualised living educational theory Whitehead (1989) suggests. Here the practitioners involved reflect on the ways in which their practice contradicts their values. Intervention and change occur through the attempt to 'live' these values in the professional context in which they work, by creating ways of conceptualising the practice that are more congruent with the values.

### ***My Action Research model***

The Action Research cycle is one where researchers (the term researchers being used inclusively) devise a **Plan**, which leads to **Action and Observation**. Following the observation comes a period of **Reflection**. From this Reflection the researchers devise a **Revised Plan**, the Revised Plan leads to more Action and Observation, which leads to more Reflection. These processes are iterative and repeated as often as required (Kemmis and McTaggart, 1988).

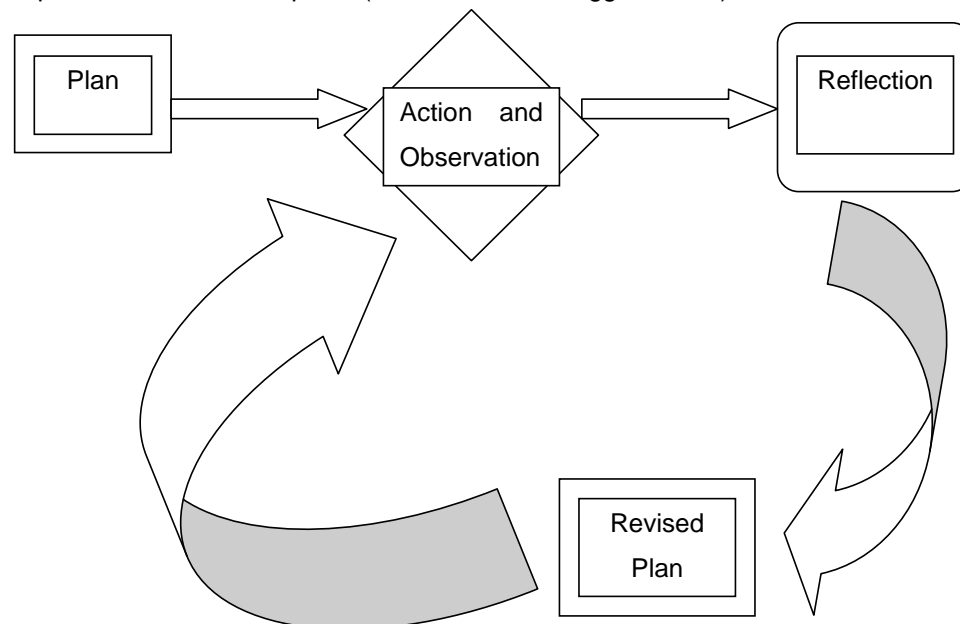


Figure 2 the Action Research Cycle

Denscombe (2003) suggests Action Research is: **Practical**; to do with **Change** (integral to the research); a **Cyclical** process; and **Participatory** – practitioners are the crucial people in project, participation is active not passive. It is not research by an individual, but rather research by the group, it is democratic. O'Brien (1998), remarks that it facilitates study of a system and collaboration with those within the system to make desirable changes to the system. Johnson (2004) describes a long tradition of action research informing school innovation. Carr and Kemmis (2005) revisited their original work on Action Research. In 'Staying Critical' they report valuing narratives which facilitate collaboration with participants.

Nereu, Kock and McQueen raise concerns about this research method (<http://www.scu.edu.au/schools/gcm/ar/arr/arow/kms.html> accessed 2006). They wonder if such research has validity outside of project, or can produce strong theories due to the low control that can be exercised over environment. They consider that personal bias will creep into conclusions due to personal over-involvement in project by the researcher. Hammersley (2004) describes action research as contradictory and inherently unstable, because it oscillates between inquiry which is sub-ordinate to practice and specialised research. Whitehead (1989) acknowledges the importance of validity when evaluating research but provides a set of criterion to reference action research against. He also suggests (ibid) that with its foundation on values and questioning the action/reflection cycle can be generalised from. McMahon & Jefford (2009) acknowledge the difficulties action research presents and suggest it is risky terrain for researchers, being both messy and unpredictable.

### ***Participatory Action Research***

Participatory action research is seen as collaborative McTaggart (1989) and promoting collegial relationships (Sagor, 1992). This research can develop participant expertise (Miles and Huberman, 1994). The record of the initial discussions about the Action Research project indicates the collaborative nature of

(Appendix 9). My own journey was moving from a linear course where I directed how and what would be discovered, to a more meandering path where several participants owned the research and the outcomes could not be predicted.

To recapitulate, the Systematic Review identified the issues that I wanted to research. This led me to the survey of teachers in Guernsey schools. From these two pieces of research I began to formulate a set of research questions. I then worked collaboratively with the Action Research Team to plan the investigations. The data gathering and analysis which I undertook and then presented to the Action Research Team led to a reflection of existing practice and then to suggested changes in practice.

This methodology echoes the Contextual Model described by Lauder et al. (1998). I am not trying to have a conversation about school performance, or provide a 'what works' approach, however I do want to participate in critical reflection of my own work in supporting schools and offer findings in those terms.

### ***Action Research in this Research Project***

The action undertaken was an investigation into the way a secondary school used the SIMS information system with particular emphasis on the reporting and assessment procedures. The project captures how information systems are used in a particular school; this ideographic methodology differs from a nomothetic methodology which might look to produce rules that can be applied more universally. Elliott (2007) tells us that it is value-for-use which is of importance, so the findings may be of interest to other schools as they try to maximize the benefits of such systems. The research presents a view of what occurred in one case for others to consider. Thomas (2007) finds that far from than informing practice, educational theory can lead it into a dead end. Academics are in danger of elevating theory over practice, but in fact it is of more value to question knowledge and to accept that one's knowledge is "tentative" (2007, p. 11). He warns us that theory is problematical in that it credits certain methods, placing too much

emphasis on what has already been established. Theory can inhibit discovery, what can actually be useful is anarchy (ibid). My investigations began with a set of concerns about my own practice rather than a specific theory, but by gathering data I have examined these concerns and challenged my own assumptions. I do not suggest that my new theory about my practice will necessarily be a strong theory in the sense that Nereu, Kock and McQueen (accessed 2006) require. However nor do I agree that such a project is a “recessive hybrid” Cohen et al. (2000, p.241). Kemmis (2009) suggests that action research aims to change: practice; understanding of practice; and the conditions wherein practice occurs. My investigations have led me to change my practice and see broader picture than I could visualize before I began researching. Whitehead (1989) agrees that it is the reflexive practice of asking and answering questions about practice that generates a living educational theory.

I was personally involved in as both researcher and supporter of ICT systems. In my professional role I was biased in that I wanted to investigate whether information systems contributed to teaching and learning, but I did not exclude any findings or weight any towards a particular outcome.

The collaborative action research model I undertook differed from the Carr and Kemmis model in that observation was difficult to achieve. The collaborative model is illustrated in figure 3.

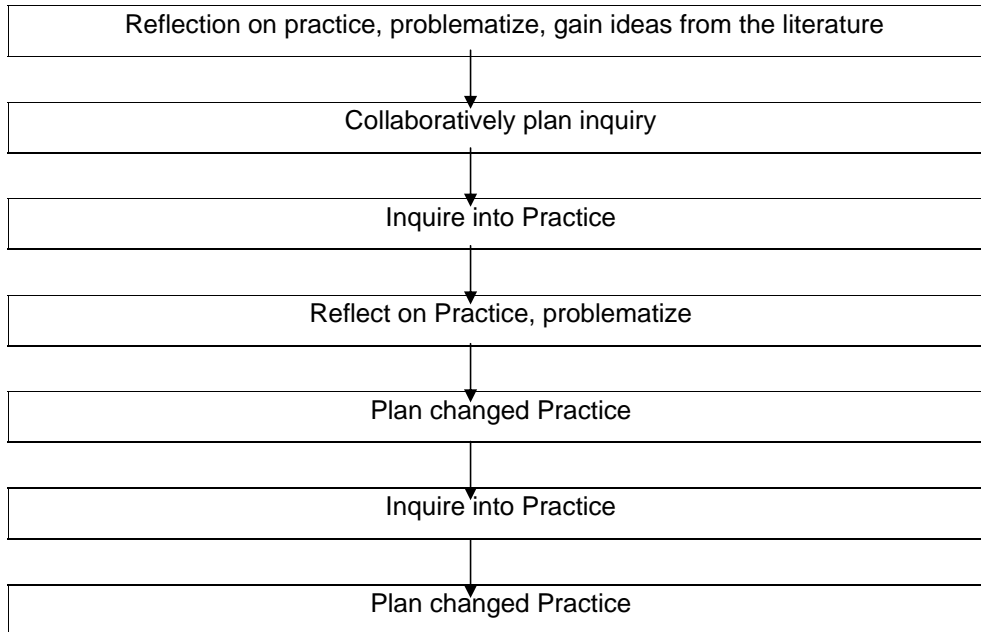


Figure 3 Collaborative Action Research

### **Methods**

The research was based on multiple methods for data gathering, these included: an action research project comprising structured and semi-structured interviews; an email questionnaire; open-ended questionnaires, and interviews.

Stakeholder	Method
Students	Structured interviews with two focus groups. The Year 8 Focus Group comprised five students; the Year 10 Focus Group also comprised five students, totalling 10 students (two representatives from each House group).
Parents	Questionnaire sent to ten families of the Year 8 and

	Year 10 focus group students.
Teachers	Open-ended questionnaire sent to a random sample of 50% of Guernsey teachers (265 teachers). Semi-structured interviews with ten tutors of Year 8 and Year 10 focus group students and two Year Heads.
Senior Leadership Team	Semi-structured interview with the five members of the Senior Leadership team. Semi-structured Interview with the Headteacher.
School Administrators	Open-ended questionnaire given to three administrators who answered collectively.
Education Department	Semi-structured interview with one Education Officer.
Software Designer	Email open-ended questionnaire to one of the original designers of the SIMS system.

Table 2 Research Methods

***Quantitative method***

A quantitative instrument was compiled to survey teachers about their use of management information systems. This was tested by colleagues in 3 schools in an effort to achieve content validity before it was sent to the sample schools. Suggested changes about wording and respondents were incorporated into the revised instrument which is found in Appendix 2. Permission was sought and obtained from the Director for Education via email; it was only after receiving this consent that the questionnaire went live. At this point in the research I considered that a random sample would provide me with data but my position as the outside agent objectively gazing upon schools' experiences would be maintained. I did not at that time see myself as part of the research.

The questionnaire was sent to 265 teaching staff in 12 schools in the Bailiwick of Guernsey. The sample was a simple random sample. The names of the 24

maintained Guernsey schools were placed in a brown envelope on separate pieces of paper; an Education Officer colleague picked 12 school names out of the envelope. It comprised 1 special school, 2 secondary schools and 9 infant/junior/primary schools. The questionnaire was a paper document sent to schools on 30<sup>th</sup> May 2006. No return date was specified, it was anticipated that the questionnaires would be returned before the end of the summer 2006 term. The flexibility of return date was intentional due to the many competing pressures on school time particularly in the summer term. The response rate was 40 respondents i.e. 15% of those sampled.

The rationale for sending a paper questionnaire rather than an email or web-based questionnaire was the belief that a paper questionnaire would produce a greater number of returns. In the preceding term (Spring 2006) other education colleagues had compiled a web-based survey asking for users views on the Virtual Learning Environment provided by the Education Department. The response rate to the previous web-based questionnaire was even lower than the 15% response rate I received.

The instrument designed for this research relied on many open-ended questions. Respondents were encouraged to write open-ended responses to 54% of the survey. It was hoped that by providing a paper based questionnaire respondents would feel more able to provide these responses. The quantitative instrument was chosen to provide a contrast to the action research. The questionnaire was divided into sections covering: the school information systems used by respondents; frequency and purpose of use; how respondents learned to use the systems; how information was perceived in the school; how systems contributed to teaching and learning; information about the respondent.

Responses were anonymous and confirmation was given on a preliminary introductory sheet that the questionnaire was designed as part of a research project and that responses would be treated in confidence. The data were input to

Excel spreadsheets for analysis. This included both a general spreadsheet of all responses and particular spreadsheets on the quality of training or the use of the system. The analysis of the quantitative instrument is presented in Chapter 3.

### ***Qualitative method***

Interviews were arranged with different stakeholders. Where names of non-school staff are used in these accounts they are the real names, I will discuss their use as I proceed. An email interview was conducted with an original designer of the management information system used in Guernsey schools. This is to be found in Appendix 3. An interview took place with an Education Officer who led the introduction of management information systems into Guernsey schools, see Appendix 4.

A collaborative action research project was undertaken in one secondary school selected by the researcher. My selection was based on the school's mature use of a school information system. However that mature use of an information system did not suggest a school that had elevated the functional over the personal Fielding (2000b), indeed it's "corridors and offices delight in the creativity and courage of those whose work it displays" (ibid, p. 410) as it proudly displays the most extraordinary range of student art work.

### ***The Action Research Team***

The Action Research Team comprised:

The Headteacher (who gave approval for the project to take place in the Research School).

Deputy Headteacher 1 (She suggested the focus of student – parent – teacher of the Year 8 and Year 10 focus group. She was very involved in the project; she approached year heads to nominate the students for the focus groups. She arranged a meeting of the researcher and the students, to arrange the student



interviews. She contacted a parent that had not returned a consent form. She organised the interviewing space for the student interviews and marshalled the students).

Exams Officer/Assessment Co-ordinator (She used the MIS extensively and worked closely with me and the school administration team to develop the assessment recording and reporting system. She also marshalled the students for the student interviews).

Deputy Headteacher 2 (He used the system to prepare the school timetable including assigning students to teaching sets).

Senior Teacher (He used the system to arrange staff cover when staff were absent. He was keen to ensure the administrative personnel were included in the project).

Education Officer/Researcher – Officer responsible for the support and development of management information systems in schools and a research student at the University of Sussex.

This team was agreed upon with the school during an initial meeting, the commitment of the Senior Leadership Team was extremely gratifying considering the many other issues competing for their time and attention.

The school had not been selected in the random sample of the quantitative instrument. The action research included semi-structured interviews with the school leadership team; with teachers; and a semi-structured interview with the Headteacher. Structured interviews were undertaken with the Focus Groups of Year 8; and Year 10 students and a quantitative instrument sent to Parents/Carers. The school administration team was also included in the action research; they completed an open-ended response questionnaire.

Before the project commenced, permission was again sought and obtained from the Director for Education. Permission was sought from Parents/Carers of the students in the student focus groups. It was only after this permission was received that the interviews took place. The Education Officer, Headteacher, Leadership Team and Teachers also signed consent forms agreeing to their participation in the research. The Software Director replied to the email questionnaire knowing that his responses would form part of document.

Transcripts of interviews were given to the Students and to their Parents/Carers before being released to the Action Research Team, so that corrections could be made to the responses if required by interviewees. Similarly transcripts were given to the tutors for correction before being released to the Action Research Team.

I made a conscious decision to record all conversations with students and teachers anonymously so that interviewees would not feel constrained by a possible school response to their answers. However the Action Research Team did consider that they knew some of the respondents by these responses. I neither confirmed nor denied their guesses as to the identity of the respondents as I did not want to breach the trust the respondents had in my guarantees of anonymity. This did present an ethical problem as the research progressed, when a suggestion of data insecurity was posed. I will discuss this issue in the section on Ethical Issues on page 47.

The data were entered into Excel Spreadsheets and into Word Tables for sorting and analysis. Some of the resulting analysis was numerical, for example how many student responses were about Attendance or Behaviour issues. Some of the data set consisted of observations such as student feelings; these were categorized as the data were analysed. Categories included things such as Limits of ICT, Parental Disapproval all which were extracted from the responses, not pre-defined.

***Initiating the Action Research Project***

I first approached the Headteacher to ask whether she would consider letting the school take part in the research. She discussed this with her colleagues and they agreed this would be of benefit to the school. They wanted to evaluate the changes that had occurred in their assessment and reporting procedures and felt that would contribute to this evaluation. I found the contributions of the Team members were invaluable in shaping the research. The entry from my research diary Appendix 9 shows how the Team contributed to the direction of the research.

The discussions concluded with us agreeing that students would be at the heart of the research, as depicted in Figure 4.

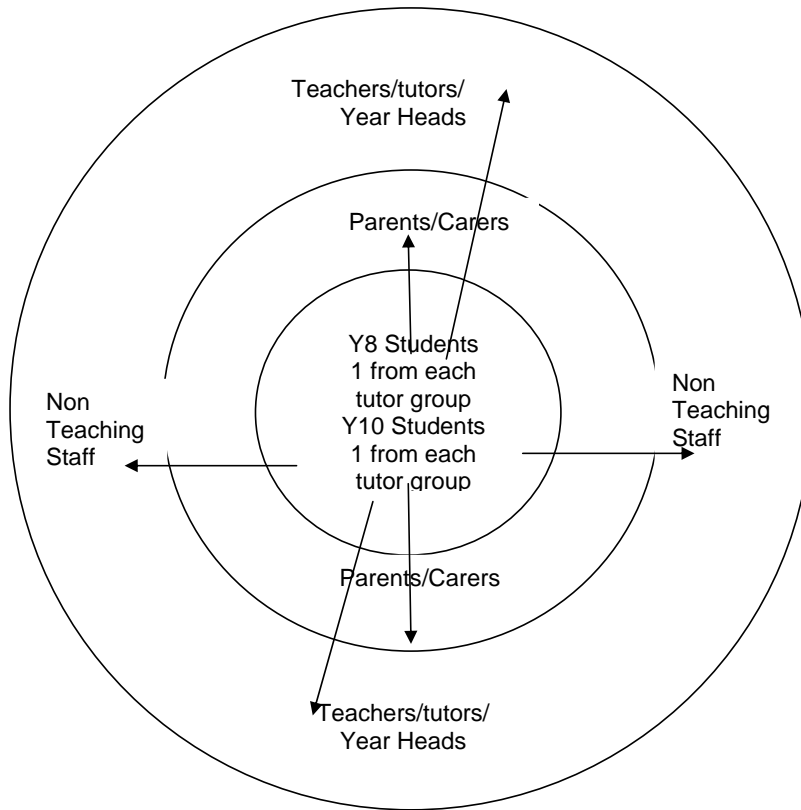


Fig.4 Research Focus Groups

### ***Methodological Shortcomings and Issues***

My chosen methods had several limitations. In terms of the quantitative method a bigger statistical sample would have generated more data, as the return of 15% of 50% of Guernsey teachers represents a much smaller sample of the island teachers i.e. 7.5%. Whilst this was statistically a small sample it did give me a picture of what those particular teachers felt about information systems in relation to their daily work. Dunne et al. (2005) warn that the questionnaire instrument embeds yet simultaneously conceals the values and position of the researcher. Like the collaborative action research, the quantitative method did not create

theory which could be used to generalize. Reflecting on why I chose that instrument, I think I veered towards a method with which I felt comfortable as a novice researcher, rather than because I considered it would support the construction of theory. I thought I would be distancing myself from the respondents, which at that early stage in both my research and my learning seemed appropriate but which I now consider both inappropriate and insincere. I was hiding my own agency behind the mask of the *facts* that I considered would be found in the questionnaire responses.

The Action Research process is iterative and I had expected to undertake more actions and evaluations. However due to a change in circumstances I was not able to research further the impact of the changed practices in the school. Residency and work permit for non-locals in Guernsey is dependent upon a Housing Licence and my licence expired in August 2007 so I had to return to England. I was unable to observe what impact carrying out the suggestions of the students, teachers and parents/carers had. McMahon & Jefford (2009) alert me to the difficulties this presents to assessors in that if action research demands a second cycle, the project may not be perceived as action research at all. However they and I refer to Elliott's (2007) principles which include value-for-use and the potential to enable beneficial change, criteria which I consider met.

My research did not follow the classic Action Research model due to the limitations discussed previously and may be considered as a case study by some observers. However, it has generated knowledge for my own professional action and for the school. Whilst the knowledge gained is situated in the Guernsey context, it has made me reflect upon my practice and provided me with a means to re-appraise this as I work in contexts other than Guernsey.

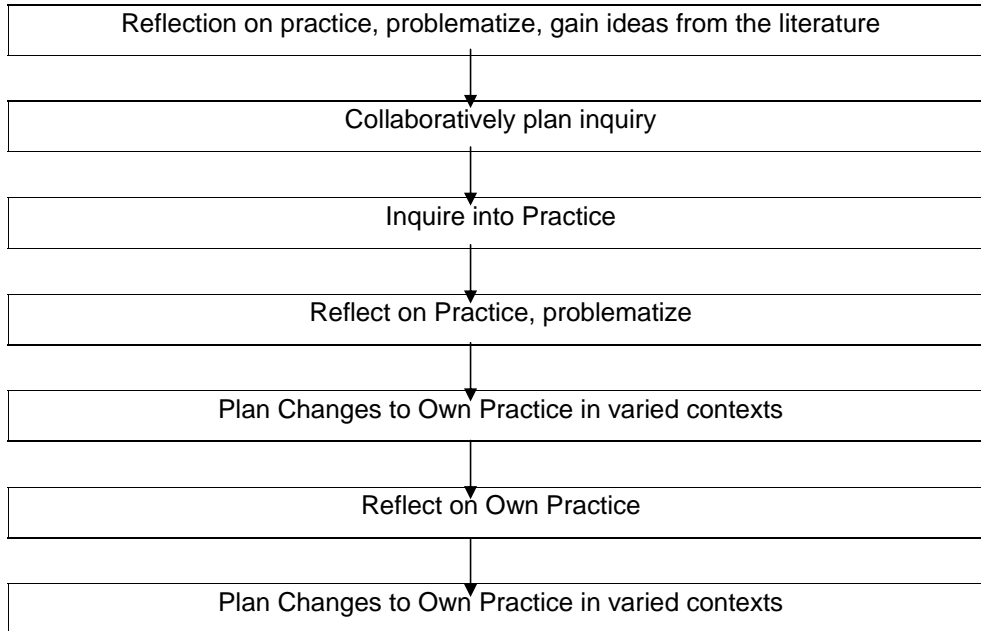


Figure 5 Revised Collaborative Action Research

### ***Practical Issues***

I was limited by the period of time that I could work in Guernsey. This had an impact on how little I was able to iterate the collaborative action. How much time school colleagues could devote to research was also a practical constraint. I would have liked to undertake more observation, such as teachers feeding back to students on their assessments, or parents and teachers engaging in discussions about reporting.

### ***Micro-political Issues***

O'Brien (1998) considers that Praxis deals with the political lives of people. My research was intended to effect change, in my practice and in the practice of the colleagues that I support. By allowing the research to proceed the school also handed over control of the environment where the research occurred. Issues arose from findings that were external to the original scope and the school had to take

those findings on board. The research uncovered issues around teaching and learning which made for uncomfortable reading. However, the school was genuinely interested in these and hoped to incorporate them into their School Development Plan. Had I relied solely on closed questions and questionnaires these issues may not have been discovered or rather aired.

### ***Epistemological Issues***

I moved as a researcher from a very positivist position, to a much less concrete position, not anti-positivist per se but much more tentative about what my research could say about the social world. I learned that knowledge was not a product to be mined and *sold on* but rather was specific to the environment, the social actors and the context from which it evolved. This necessitated a broader range of instruments, I could not rely on questionnaires alone and had to both become involved with the people I was researching with and let them make decisions about the research. I was not able to control what was discovered or where would go. If methodology involves an analysis of what is at stake when research is undertaken Dunne et al. (2005), the epistemological issues were the most significant for me as a researcher. Knowledge was not something I alone could generate; there would be no Eureka moment. Knowledge was negotiated between myself and the many participants in the research and was specific to the environment we were working in. The researcher becomes facilitator and summarizer of knowledge not producer of knowledge (Cohen et al., 2000).

### ***Ontological Issues***

Ontology asks us to consider the nature of existence or reality, what is real? Are the data gathered from discussion and interview more or less real than those gathered from questionnaire returns? I began my research considering reality to be concrete in nature but over the course of I began to see that reality was a social construct and I would need to triangulate any research findings. Interviews; questionnaires; discussions; review of the literature, the *mélange* of these methods helped me to at least ask the question what is reality?

***Ethical issues***

In terms of the ethics of I was guided by the Sussex Institute Checklist (Appendix 1A). The biggest ethical challenge I faced was when some students suggested that there had been a data breach. As an ICT professional this was an anathema to me. However I was also aware that the perception of students is somewhat different to the perception of others in the education arena. I discussed the alleged breach with my tutor and we agreed that the only course of action was to discuss it with the School Leadership Team. I reported the alleged breach to the Research Team but did not reveal which students had said this had occurred. The Research Team discussed the allegation but concluded that they were confident that such a breach had not occurred. In the light of a 'normal' school environment, it is difficult to know if such a breach had occurred, however by following the Sussex Institute Checklist I had a set of guidelines for this situation.

I did not use the names of the school based research participants, but rather preferred to maintain their anonymity. As there are a limited number of schools on the island that could have participated in the research I wanted to protect the identity of the school, and hence the community of researchers. I did use the actual names of the Software Developer and Education Officer, but this was with their consent and represented their preference (I did explain that a copy of an Ed. D. thesis resides in the Sussex University Library). Another ethical issue that I had to contemplate was concerned with the responses that teachers made both in the quantitative and qualitative research. I was privy to intimate meetings with colleagues who were at ease in their own group. This made them comfortable enough to reveal their thoughts about the school leadership. I felt privileged to share these thoughts but wanted to ensure that they were relayed anonymously. Similarly, with the open ended responses in the questionnaire, some colleagues did leave their names and contact details for me to follow up their concerns; I have removed these from the appendices although I did respond to them at the time the survey was completed.



In terms of considering the appropriate legislation, Guernsey does not have many of the legislative controls that exist elsewhere. For example, the island is not part of the European Union so none of that legislation applies. They have not passed a Children's Act and do not have the Equal Opportunities or Health and Safety legislation that English schools would consider a backcloth to their policy making. However the island does have a Data Protection Act (2002) and is constrained to operate within the terms of the Human Rights Act.

### ***Macro-political issues***

The Guernsey Education Department has invested much in the Education ICT Project in schools. It could be considered that they would want research findings to endorse this investment. The research was sanctioned by the Department but not with such an explicit expectation of the findings. Whilst an Education Officer took part in I was not constrained to undertake research of a particular kind, I was able to evolve my own methods which I discussed with Education Colleagues but was not directed in any way by the Department.

### ***The Guernsey Context***

The very fact of being an island community impacts teaching and learning and whether management information systems contribute to the same. Billot (2005), notes that educational leadership is framed by how islanders maintain their sense of difference. In Guernsey this difference is writ large. Cheong (2000) emphasizes the need to examine how much cultural factors impact the effectiveness of education. UNESCO (2004) notes the need for education policy makers to "improve local relevance whilst maintaining regional and international recognition" in small islands. They also note the high level of mobility for both work and education in such communities. This is certainly a feature of Guernsey where people are employed on a license system, which necessitates frequent staff (and often student), movement. This mobility may impact student learning, as they have to move with their family, or because their teachers are transient, disrupting the relationship foundation that teachers and students build on to develop learning.

UNESCO (2004) refers to the links between education and social status prevalent in some small islands. In Guernsey there has historically been a cachet attached to a '*College*' education, many of the island's politicians, lawyers, doctors have been traditionally educated in the independent College sector (the Guernsey equivalent of independent schools). This sector had an impact on the debate surrounding the retention of selective education, the result of which was to retain the status quo in what might be described as a "fundamentally flawed and exclusionary system of education" (Slee et al., 1998, p. 4). This debate took place in 2001 and affected subsequent Education Development Plans. UNESCO (2004) suggests that to achieve sustainable development, education may need to be more inclusive, in order to enhance learners' confidence and self-esteem. Guernsey's response to such a claim was to begin a programme to build high quality new secondary schools (similar to the Building Schools for the Future initiative in England), but to retain the selection of pupils at 11. The research school was affected by this programme as the leadership team was heavily involved in the design of the new school, both in terms of its physical building and more importantly the building of a new school from a new pupil body drawn from the existing school establishment and a school which was being closed. This impacted how much we were able to focus on the continual improvement of practice because as the research proceeded, the amount of time available for discussion was reduced.

UNESCO (2004) also remarks on the importance to small islands of the application of ICT. ICT presents both opportunity and threat: opportunity to develop knowledge societies and break down existing temporal and spatial boundaries, as well as transforming what has been historically considered as learning. However, these technologies also pose a threat to small islands as globalization threatens island economies and the global economy chases cheaper yet more highly skilled and adaptable workers (UNESCO, 2004).

Bottery (2004) suggests that context should include not just school type or location but rather reflect the concerns of the local community and the impact upon it of national and international issues. The Guernsey education department has invested much in the provision of ICT in schools to develop skilled workers. There is a desire for the island's workforce to compete in global markets and the island has developed a strong foothold in the international finance sector. However this foothold is at risk from competing international finance workers and from the tendency of global companies to continually look for economies of scale. Haughey (2006) notes globalization brings awareness of competition. Dimmock and Walker (2005) suggest that globalization will in fact minimise cultural differences. Bottery (2004, p. 31) agrees suggesting "we may be facing the possibility of a world largely stripped of local meaning". Guernsey is indeed an example of "Localized communities asserting their particularity" (Billot, 2005, p. 29).

Dimmock (1998, quoted by Dimmock, 2000, p.13) suggests globalization makes it more important to take cognizance of each society's culture to "increase the likelihood of policy acceptance and implementation". The Guernsey Education Department has both followed English education policy: for example introducing a 'Numeracy Strategy' and a 'Literacy Strategy'; and moved away from it, abandoning testing of pupils at each Key Stage, thus escaping from the "forest of assessment procedures" threatening education described by Broadfoot (1999). One notable policy difference is that the 1988 Local Management of Schools reform did not occur in Guernsey. Maintained schools do not have a Board of Governors; the Education Department retains centralized control of buildings, budgets, staffing and curriculum. Here the "twentieth century notion of the public" is retained (Blackmore, 1997, p. 187) and not replaced by a market and a managerialist economy of educational work ... infused with different values and priorities (ibid).

### ***School and Island Culture***

Gipson (2003) notes the complexity of school cultures and advises that the unique nature of each school context must be acknowledged. Cheong (2000, p. 209) refers to the “shared assumptions, beliefs, values and behaviours” found in any group, community or nation. He says that learning in a classroom is impacted by the culture of that classroom, which is impacted by the school culture, which is impacted by the community culture, which is impacted by the national culture. “Cultural homogeneity and cultural heterogeneity” (ibid, p. 215) are important factors in the analysis of educational effectiveness in a society. He warns researchers that cultural homogeneity (a conviction that members of a social group share the same assumptions, beliefs, values and behaviours) cannot be guaranteed, regardless of whether the group is an island nation, a school, or a classroom. I saw evidence of this difference of beliefs when interviewing teachers in the research school. Their perception of why the leadership team encouraged the use of information management systems in the school was markedly different from the reasons proposed by the leadership team. I will return to the debate about cultural homogeneity or heterogeneity “a contextual culture is very diverse among members” (Cheong, 2000, p. 217) when looking at the response of teachers in the action research project.

Dimmock and Walker (2005) offer a taxonomy of culture which is collective, emotionally charged, based on people coping with unique circumstances, symbolic, dynamic and above all fuzzy i.e. contradictory and ambiguous. Guernsey’s unique island culture inevitably affects whether information management systems contribute to teaching and learning. When looked at from the societal cultural perspective, the systems are used differently from how they may be used in other societies.

### ***The Different Cultural Perspectives***

From the community cultural perspective, the Guernsey Education Department first introduced the systems to simplify school administration (Appendix 4). However,

the Department now concedes that schools have different requirements from these systems. From the school cultural perspective the use of management information systems will be influenced by the leadership team's requirements; but also by how teachers perceive the systems and the reasons for their use; and how learners and parents/carers regard the outputs from the systems. This will also impact the classroom cultural perspective of such systems. Haughey (2006) says that context sets limits on how much change can be achieved, but context can also facilitate change, as the Guernsey model may show.

## **PART 2: DATA PRESENTATION AND ANALYSIS**

### **Chapter 3 Research Findings - The usefulness of Information Systems for Teaching and Learning**

#### ***The 2006 School Questionnaire***

Bryman (2001, p. 63) suggests that not all quantitative research begins with an explicit theory. I would propose that my own quantitative research began with a 'set of concerns' around which I collected the data rather than an explicit theory. My concerns focused on: -

- Which systems were used and how they were used
- How the systems were learned
- What were the perceptions of the data quality and the purpose of school data
- Whether the systems supported teaching and learning
- Who responded

Unlike Fowler (2002) I do not consider that the sample is necessarily unbiased. I have to be aware that respondents may have responded because they knew the researcher, because they held a strong opinion about information systems or because they happened to have a few spare minutes to fill rather than any strong feelings about my area of research, indeed Fowler himself suggests this may occur (2002).

***Which Systems Are Used?***

Ninety five percent of the respondents used the School Information Management System (SIMS), 33% also used Excel as an information system. 28% used a non-SIMS Pupil Report system. 5% used a non-SIMS information system and 3% used a different assessment data system.

The information system was used most frequently in the classroom, or on a laptop somewhere in school, or in the school office. Access to the system did not appear to be a problem for the respondents when they were in school, 33 respondents accessed the system in their classroom. However, this number dropped to 12 people that could access the system at home. Only one respondent was aware that the system could be accessed on any computer in the school, this is the case throughout all Guernsey schools but did not appear to be well known.

***How the Systems Are Used***

The number and frequency of uses of the system mirrors the diverse applications of the system. Some of the data entry responses will only be from secondary schools e.g. on issues such as timetable or examination data.

Pupil registration directly onto the computer was the most frequent data entry task cited by 30 respondents, followed by Assessment and Reporting cited by 29 respondents each. Different frequencies of use, e.g. daily or weekly or termly indicate the cyclical nature of school information. Certain tasks such as pupil registration had to be done on a daily basis (and indeed since this survey was undertaken some secondary schools began registering pupils on a lesson by lesson basis). Some tasks, such as reporting, were done less frequently. Many data entry tasks cannot be quantified as daily or annually and are reported as other, for example entering data about pupil behaviour, which happens as behaviour incidents happen.

I asked respondents what use they made of the information and how often it was used. 23 respondents used Pupil Home data; making it the most often used and on a wide spread of occasions. 21 respondents used registration data. 21 respondents used Assessment data, allegedly frequently and particularly on a termly basis. 18 respondents used the information system for personal information about the pupils. This type of information is used on a regular basis throughout the school year. In the case of 7 respondents the timetable information was used daily, more than half of these are senior managers. However more than 50% of respondents that used timetable information at all (i.e. not just on a daily basis), were teachers. One area of the information system that is not being frequently used by teachers is that of Pupil Behaviour. Only 9 respondents cited using the Behaviour information, which suggests that Guernsey Teachers do not consider an information system is the place for finding out about Pupil Behaviour issues. When asked whether they considered that using information system was a useful tool in their daily work many agreed that it was. 67.5% of the sample suggested it was useful however 25% suggested it was rarely or never useful to their daily work.

Respondents cited many reasons why the system did not help them. Some Teachers suggested access was a problem:

*I cannot access SIMS from home as I cannot access the school network from home.  
(Questionnaires 2006)*

Some Teachers suggested that they did not have the required knowledge to use the systems:

*I usually access data termly and forget how to do it.*

*Not knowing what the system does - personal knowledge of how to use it effectively.  
(Questionnaires 2006)*

Other Teachers found either the hardware or the software problematic:

*It sometimes breaks down.*

*Time taken to log on and access information*



*SIMS, too many 'windows' before access to what I need.  
(Questionnaires 2006)*

The term access is used here in different ways, some respondents did not know that they had access to the system, some respondents wanted access at home. Home access is technically possible but had not been made available in the Guernsey model, an issue that also arose in the Action Research interviews. Access is also used in terms of the speed of the networks, which hampered access in some cases. Some of the difficulties encountered related to training requirements, some related to the amount of time teachers had at their disposal for learning and using systems. Four respondents who complained of too many windows or difficult routes into the information cited the information systems themselves as problematic.

### ***How Could the System be More Useful***

When asked how the information system could be more useful? Training and the speed of access were separately of concern for 25% of respondents. Respondents offered the following advice for system improvements: -

On training teachers said:

*Clearer explanation on how to access data.*

*Increase training of applications available without taking away prep. and marking time.  
(Questionnaires 2006)*

On access teachers said:

*Fast log-on. Some data would be better printed out by admin and then distributed rather than 70+ teachers individually logging on to get their little bit of information.*

*Home links, More links to other packages e.g. virtual platforms.  
Improve log on times - laptops take 6 minutes to log on.  
(Questionnaires 2006)*

### ***How the Systems Are Learned***

Most of the respondents had learned the system by attending a course that was delivered at their school. This seemed to be the preferred method for school staff even though many training courses were available at an external venue. My assumption was that staff would want training to take place outside of school so that they could focus on the training without the usual distractions that the school environment provides. This was an issue I followed up with the teacher respondents on the Action Research project. Bosker et al. (2007) suggest that training will provide more knowledgeable users. Their research on training cited one characteristic as “1 day off the job” (ibid, p. 458) but if training takes place in school it can be hard to be fully off the job. The quality of training was mostly perceived to be acceptable but there were some exceptions. 1 respondent had not received training. Forty five per cent of respondents rated the training that they had received as between good to excellent. 10% of respondents noted that they need time to put the training into practice. I think that is one of the key issues for schools to consider. Often colleagues attended a training course but if they were not given subsequent release time to put the training into action the training is at best diluted and at worst not used. Comments about training ranged from excellent to not very useful:

*Excellent - shown how to put in teacher assessments with a demo and very clear photocopy sheets explaining fully.*

*It was good but I didn't get the chance to practise it quickly and often. I lose the skill or forget and have to relearn - the booklets we get are great though as they help you to recall how to do it.*

*Not very useful especially for rarely used stuff regular use rather than training.*

*(Questionnaires 2006)*

Thirty percent of respondents considered that the educational issues of information system usage were covered on training courses that they had attended, 35%

considered that the courses only covered the ICT issues. It may be the case that a focus on ICT issues is appropriate, but teachers should expect an educational explanation of why systems are being introduced, again whose interests are being served by the systems. Training was repeatedly cited as a requirement if information systems are to be more useful. Training was provided by the Education Department; both formally in training courses delivered off-site, and informally in training sessions delivered in school. What is of interest is how small the number of teachers that actually attended formal training sessions off-site (25% of respondents).

When asked how much support respondents had received the picture was quite mixed. Whilst 65% of respondents had received a lot or quite a lot of support, 20% had received little or no support. Support came from a variety of sources including: other colleagues; the Education Department ICT Team; the Senior Leadership Team and the MIS Co-ordinator. Support was deemed to be of an acceptable level. 60% of respondents rated support as from good to excellent. One respondent suggested the support received was ok, and one respondent suggested the support was adequate but felt that a 'sound' system should be logical and require very little training.

### ***Information Policy***

My assumption was that schools would have an information management policy which staff would be familiar with. In fact only 35% of respondents believed a policy for information management existed in their school. Of those 29% knew who contributed to the creation of the policy.

### ***Data Quality***

55% of respondents considered the data that the management information system provided were accurate. However 5% of respondents did not consider the data to be accurate and 10% were not sure. 68% of respondents believed the school could rely on the data, but 8% did not know if they could rely on the data and 15% did not

feel sufficiently confident to respond to the question. If respondents do not believe the data is accurate they are unlikely to use it on a regular basis.

### ***Purpose of data***

Although one respondent considered that the data held in the information system was only used to make returns to the Education Department, 60% of respondents did not see that as being the reason for using the information system. 1 respondent suggested the data was used to '*inform planning, allocate staffing to support or extend children's learning*'. Another said that the register and data on pupil attainment were used in the school.

### ***Teaching and Learning***

If a management information system is to contribute to teaching and learning, it needs to be used by teachers to inform their practice, they need a sense of ownership of the information as well as a certainty that the data are reliable. There was a mixed response to the question of whether the information system informed teaching with 47.5% suggesting this occurs sometimes or always. 30% of respondents suggested that the information system rarely or never informs teaching and learning.

The number of teachers that never used the system for this purpose matched the number of teachers that always used it to inform their teaching. 24 respondents listed the ways that they used the information. Of those 50% used the information for student assessment purposes, 17% used the information to retrieve personal data about students such as parental situation, medical information or general data. 8% of these accessed special needs data and 4% accessed attendance data. Those who had responded 'Always' to the question on teaching and learning described how they used the information:

*Use assessment records to grade levels of class. Use data collected to analyse trends in departments and cohorts.*

*Modify planning to ensure skills and coverage of numeracy and literacy meets children's needs. Used to put children into differentiated groups for literacy, numeracy and science.  
(Questionnaires 2006)*

### ***Students Using the Information System***

15% of respondents believed that students could access the information system. Two of these cited the Virtual Learning Environment system in their school. In fact students cannot directly access the SIMS information system in its current design. This is due to the sensitive nature of the data held. Respondents did not refer to outputs from the system that students do use, such as reports. This question led me to ask how feedback to students and to parents/carers was achieved.

### ***Feedback to learners and Parents/Carers***

50% of respondents fed back to students verbally, this was clearly a preferred method and is indicative of the interpersonal relationship foundation that students and teachers build on. 30% of respondents wrote comments and reports. 25% undertook assessment and review. One respondent used a message board to feedback to students.

65% of respondents fed back to parents via the school report (whether end of year or interim reporting). This is a major communication tool for schools and families. 37.5% fed back to parents via the formal Parents Evening. Telephone calls were not seen as a major communication instrument, with only 17.5% of respondents citing this as a feedback mechanism. The respondents did not specifically mention e-mail as a communication tool. Although omitted here, this was an issue that was raised by teachers in the Action Research project.

From the meagre number of responses to the question on feedback it seemed that respondents did not perceive an information system as having much connection with students. The only significant view was that teachers need to understand the system more, but only 7.5% of respondents held even that view.

***What can be inferred from the Survey?***

The response rate from the questionnaire was 15%, 40 questionnaires were returned. Of those that made a return 33 were female and 7 were male. 65% of respondents were Teachers; 20% were Senior Managers; 10% described their role as Other; 2.5% were Teaching Assistants.

How valid are the findings from this survey? The original sample size was 265, which represents a half of all teachers in the Bailiwick of Guernsey, but the response rate was only 15% of whom 85% were teachers (including School Leaders), 5 questionnaires were completed by non-teaching staff. A higher response rate would have been preferable but I was able to discern meaning from the responses received. The questionnaire was anonymous but respondents had a space to add their name and contact details if they wished to follow up any of the issues. 15 respondents asked to follow up the questionnaire and these respondents actually wanted more training. 30% of these came from one school where the information system was not being well used at that time. One respondent was a Headteacher who had identified a need to develop the school use of the information system.

***Summary of Survey Findings***

95% of respondents used the School Information Management System at their school, and frequently in their classroom. The system was mainly used for registering pupils, for assessment and reporting, for accessing pupil home data and pupil personal data. Many teachers in the survey found the information system to be useful but problems of access, particularly access from home, and the slow speed of network systems were noted.

Training was identified as a requirement but a preference for school-based training was expressed. Schools do not often have an information policy which their staff are aware of.

Respondents considered the data contained in the information system could be relied upon and was not used only to make returns to the Education Department. However, less than a half of respondents thought that an information system informed teaching and learning.

Feedback to students was often verbal, but 30% of respondents wrote comments and reports. However, reports were seen as a vehicle for communication with Parents/Carers for 65% of respondents.

The survey findings suggested areas of research that I needed to focus on more intensively. These were issues surrounding training, access, usefulness of information systems, particularly for supporting teaching and learning, and feedback to students and their Parents/Carers. These issues were investigated by interviewing teaching staff in the research school.

### ***Tutor Interviews***

Beastall (2006) suggests that teachers need to be made aware of the advantages of incorporating ICT into teaching. I am not advocating an awareness programme. I think educationalists and technologists need to negotiate the usefulness of information systems for teaching and learning. There has to be some recognition that teachers have not rushed to use school information systems and that reluctance has to be investigated and considered by both policy makers and technologists.

As part of the Collaborative Action Research it was agreed with the Action Research Team that I would interview Year 8 and Year 10 Tutors and their Year Heads. These teachers were selected because of their connection to the students in the focus groups. The Deputy Headteacher negotiated the interviews with the Year Heads and release time was made available so that the teachers did not lose any non-teaching time. The interviews were semi-structured, I had a specific list of

questions for discussion but the discussions were fluid. Mason (2002) describes knowledge derived from interviews as constructed rather than excavated. My role as MIS Co-ordinator affected what knowledge was constructed, for example in the questions that I asked or in the way that I commenced the interview with an explanation of why I was asking for the tutors' participation. The tutors also constructed the knowledge, as they took the discussions off in different directions and what was learned was not just about information systems, but about issues that face teachers, about their perceptions of their roles, their own learning and how they view school leadership.

I interviewed the Year 8 tutors first; the group included the Year Head and 5 tutors. The interview took place in a Science Laboratory because that was the room where the Year 8 tutor meetings took place normally, the Year Head being a Science Teacher. My questions centred on Student Learning, on Teacher Learning, on Communication, the Management Information System and the School Leadership. I transcribed the interviews and sent copies of the transcripts back to the tutors in order for them to raise any issues of accuracy. I then coded the issues arising from the interviews. I interviewed the Year 10 tutors and their Year Head. This interview took place in a Food Technology room because again that was where the Year 10 tutor meetings took place. I felt it was important that I joined the tutors in a setting which they were familiar with and which emphasized my role as the guest in their space, rather than choosing an allegedly neutral space (if such exists in a school). The two groups of tutors had similar concerns about reporting and assessment and using the information system. However the Year 10 tutors used the meeting to voice concerns about other issues such as whether they should be teaching certain aspects of the Personal Social and Health Education or Citizenship curriculum. It was more difficult to keep the Year 10 tutor discussions focused on information systems. Again I transcribed the interview and sent it to the tutors for accuracy checking before coding the responses. In Year 8 tutors are concerned about issues such as Attendance or Assessment but less so Behaviour and these concerns influence the way that the information system is used.



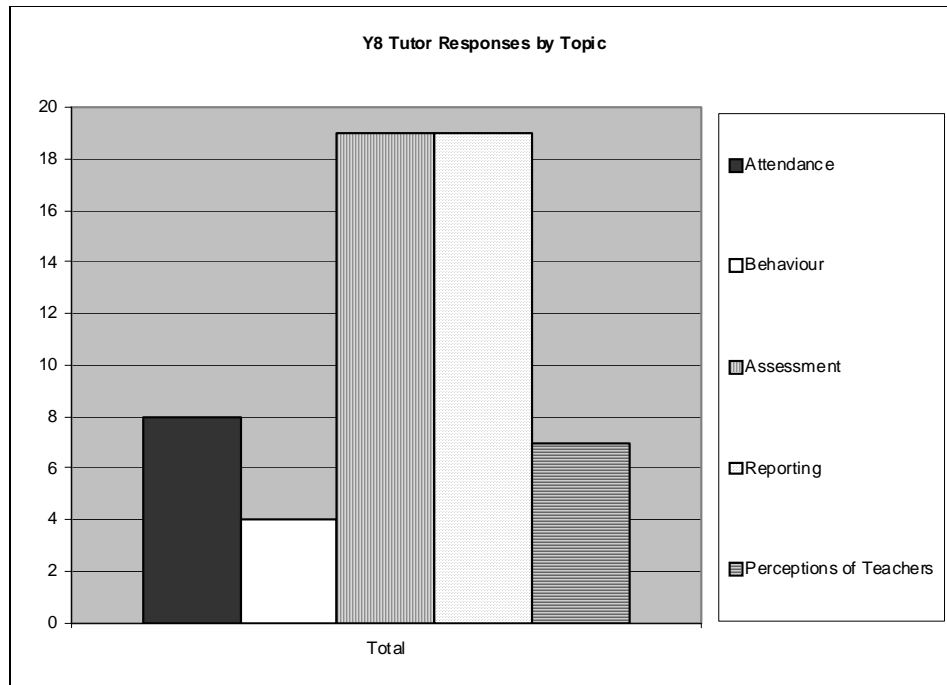


Figure 6 Year 8 Tutor Response by Topic

In Year 10 tutors were more concerned about Attendance and Behaviour issues but also responded greatly on the issues of Assessment and Reporting. These differences reflected the increased number of challenges to attendance and behaviour that students in Year 10 are likely to mount.

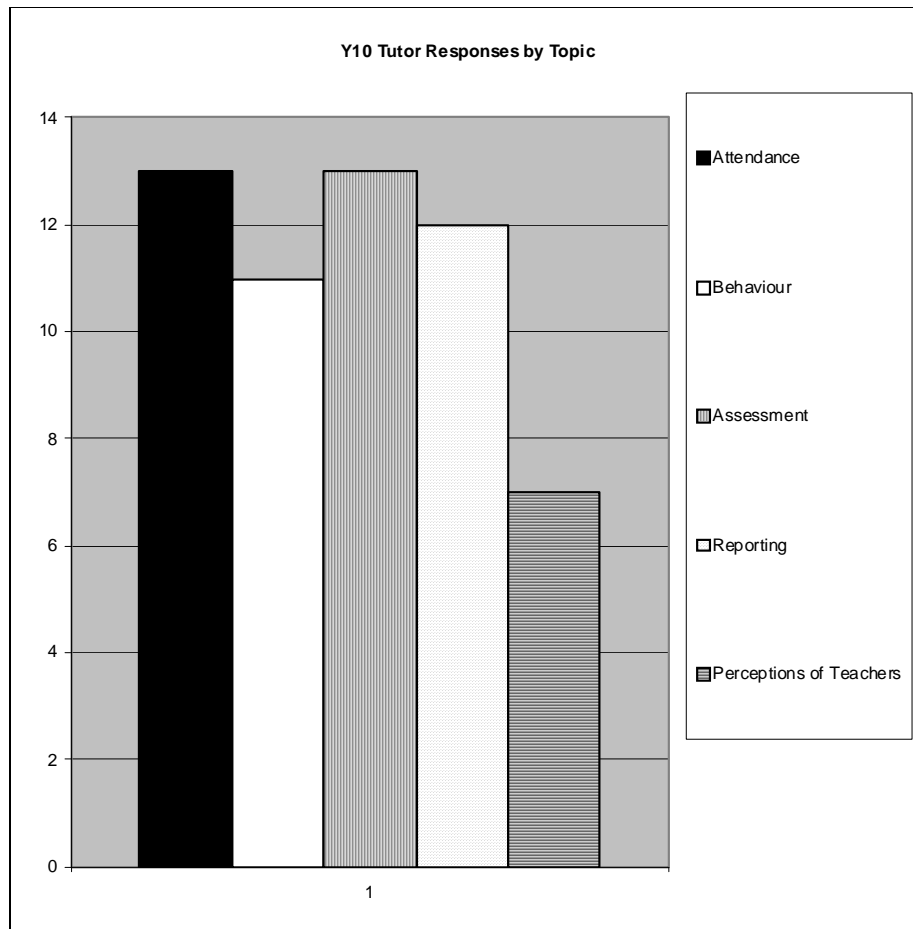


Fig 7 Year 10 Tutor Responses by Topic

### ***Tutor Responses by Theme***

Coding of both year group tutor interviews revealed their concerns about; student absence; school bureaucracy; the difficulties the systems presented; the need for data to be balanced; issues around the reports and the lack of time available to them.

The Year 10 tutors were much more concerned about the amount of time they spent on resolving student attendance issues. Their responses included:

*Spend tremendous amount of time chasing absence.*

*Take manual register for Asdan then transfer to computer, it is fiddly and time consuming.*

*(Tutor Interviews 24-05- 2007)*

Some Year 10 tutors felt that there was too much bureaucracy in their role. Merson (2001) contends that electronic systems will free teachers from bureaucratic tasks but notes that this freedom comes at a cost. Increased surveillance of pupils indicates an Orwellian vision.

There were concerns about what data were available to tutors “*You need a summary of their previous marks and their current marks*” suggested one Teacher whilst another said “*I like the idea of termly reports but tutors need to see what the kids are getting*”.

Tutors suggested that the information system was detailed but needed to be simplified “*The pathway is too complicated to remember the details, we need simple pathways*”.

There was feeling that tutors did not get enough information about student attainment but that there was plenty of information about negative behaviour issues for example one Teacher suggested “*You hear a lot about the negative stuff (sanctions) but not the positive stuff*”.

The termly reports were criticized because there was no space for a comment. This concern reflects suggestions that assessment feedback should be focussed "On those aspects that will help pupils improve (e.g. comments and not grades)" (McCormick, 2004, p.117). This was an issue that parents/carers had also noted in their responses. One Teacher commented "*The reports don't have room for personal comments so one cannot see why a student is disorganized for example*". There was also a concern that tutors did not see the reports before they were sent home, as one Teacher responded "*We don't see the reports they just dish them out*".

Whilst the information system contains much data about students some tutors took the data out and used it in their own systems. This may be because the data was not accessible off site, or maybe because the Teachers found it easier to use the data in other formats than in the information system.

The Year 10 tutors had concerns about areas of the curriculum that they did not feel comfortable teaching, such as PSHE or Citizenship. Whilst this discussion was not part of my enquiry, it was strongly felt and I conveyed this to the Action Research Team when feeding back on the tutor interviews.

The tutors noted a perennial problem for teachers, that of insufficient time "*I've got enough data but not enough time*". Whilst they considered that they had access to data, they did not have sufficient time to make full use of it. The tutors made suggestions as to how the time could be made available:

*We could have had a late bell (to dispense the reports) but then the curriculum suffers, there is not enough time.*

*One day per week extended tutor time could help with this.*  
(Tutor Interviews 24-05- 2007)

Tutors noted that they did try to track student progress but could not always find the data on the information system. At that point I showed one Year Head how to access particular reports and she excitedly shared this new knowledge with the tutors. The tutors complained that they had not had training on tracking data, and would have welcomed this. They noted that a small amount of training is required, not a complete manual of the whole system *"None of us have had training we don't want a big manual just notes on how to get this or that"* suggested one tutor. I return to this in subsequent questions on their own learning.

#### The Role of the Tutor

The tutors were unclear as to why they were setting targets for students rather than the subject teacher. The tutors felt that as subject teachers adding assessments to the information system had gone relatively smoothly *"Putting levels on has gone sweet"* suggested one respondent, but the setting of targets was more difficult *"When it comes to target setting I do have enough information, I wouldn't sit down and look at everything"*.

There was a feeling that their tutorial role was not being used as effectively as it could be. They felt that the Leadership Team considered the role as very important because the tutors had daily contact with the students, but this led to work being delegated down to them. Tutor responses included:

*Workload delegated because tutor sees kids each day.*  
(Tutor Interviews 24-05- 2007)

My initial questions asked the tutors about their role in relation to student learning, about whether they had enough information to support them in that role. Many of the responses to the questions on student learning identified a concern about their role, whilst it was clearly understood tutors felt that they had insufficient time to address all that was required of the role. They felt that they had access to information about students but they weren't always able to use it either because there was not enough time or because they had not received adequate training. They found that the information system contained data but sometimes this was

difficult to access. Tutors were unhappy with some aspects of the reporting process and made suggestions for improvements to this and also made suggestions for how they could be given more time for supporting student learning.

### ***On Teacher Learning***

The following themes emerged when tutors discussed their own learning: the administrators are the experts, their learning needed to be contextualized; they used paper systems to back up the computer system; they needed short bursts of training; they needed time and training; they wondered why the Leadership Team wanted them to learn the systems.

Some tutors found that if they wanted help in learning the information system they would go to the school administrator. This echoed the findings of the Systematic Review, which suggested that school administrators are the experts.

Whilst tutors said that the information system was complex when discussing student learning, they did not suggest that they could not use it. For example one suggested *"I don't find it hard for what I need"*; another said *"I can check attendance, complete registers I know how to use it"*.

### **How the Tutors Learned**

The tutors said that they learned how to use the system by asking their colleagues, although one respondent did intimate that not all colleagues were 'kind' saying *"I ask people that know how to use it, people that are going to be kind"*. The Leadership Team had also noted this collegiate approach when interviewed.

I asked them why they did not attend training courses that took place at the Training Centre. Some suggested that they were not aware of what courses were on offer, some felt that they preferred to learn in school, that they felt de-contextualized if the training took place elsewhere. They felt that if they were to take valuable time out for training it needed to be for their subject area. Visscher et

al. (2003) found that external training provided a powerful explanation of differences in SIMS use between schools. However, in both the quantitative survey and these interviews I found that teachers were reluctant to attend external training courses linked to information systems. Responses included:

*I prefer to be in school, I feel de-contextualized if I am not learning in school.*

*If we do go out of school I would rather be on an inset day.*  
(Tutor Interviews 17-05- 2007)

These comments echoed the findings from the questionnaire sent to other Guernsey teachers. They posed a real dilemma for me as a trainer, how to best achieve training which teachers require but which they feel comfortable attending both in terms of location and in terms of the amount of time required.

The tutors noted difficulties in using the information system. Some of these related to the cyclical nature of schoolwork, some to the frequent changes in information technology or the technical complexities of the particular information system used. We discussed the technical changes and whether change was simply to ensure that ICT personnel stayed employed. I found this an amusing suggestion at first but on reflection I wonder if I am guilty of encouraging schools to adopt these constantly changing systems so that I can stay employed. I think my answer to this is that I am not responsible for the change, but try to ensure that it is embedded as smoothly as possible for schools. Some tutors noted that they had subverted the system, refusing to use certain parts because it was too time consuming. Others removed the data from the information system and used it in a different programme. Comments included:

*Why does it change so much? Is it just ICT people ensuring that they have jobs?*

*I use Behaviour Logging, I do find it time consuming.*  
(Tutor Interviews 17-05 2007 and 24-05- 2007)

There was confusion as to whether their role as tutors required them to access assessment information. They considered that they used the information in their role as subject teachers, but not as tutors. One tutor asked, *“Am I using as a subject teacher or as a tutor?”* another responded, *“We don’t use the assessment information as tutors”*.

The tutors noted difficulties they faced in using the information system; they wanted small chunks of training. Their own learning was based on informal rather than formal sessions. They learned by trial and error rather than by attending formal courses but found this frustrating. As a trainer I need to devise meaningful training sessions that address the competing issues of time and need to know. This suggests smaller but more regular training sessions however this may have resource issues for schools:

*We want step by step but on a need to know basis.*

*We want less than a complete course.*  
*(Tutor Interviews 17-05- 2007)*

The tutors noted the technical difficulties they encountered, the frustrations of which should not be underestimated *“Network unbearably slow”* was one tutor’s perception. These difficulties are not inherent in the information system design, but in the technical infrastructure design, but they have an impact on teacher perception of the information system. Again these findings echoed those of the teacher questionnaire.

Yet again the issue of time was raised, in relation to their learning and whether the time expended on the learning was going to be cost effective *“Need time to prepare for absence if attending course, is it worth it?”*



### How Training Could be Improved

The tutors suggested how training could be made more useful for them and complained that sometimes there was an expectation that they should use the information system but they were not given the required training:

*Training needs to be departmentalized.*

*Does help if we had an inset to get to know the system.*

*When we had to do lates we were told to do it in SIMS but not how.*

*(Tutor Interviews 17-05- 2007)*

There were areas of the information system that the teachers found useful. Some of these reflected their roles as tutors some reflected their roles as subject teachers.

*Do use letter home facility.*

*Use SIMS as a subject teacher to check commendations but not as a tutor.*

*(Tutor Interviews 17-05- 2007)*

The staff did not feel that using the information system was imposing anything different on them, that it was now a 'normal' part of teaching. There was an awareness that if staff had to do something that they felt was not appropriate, it was not because of the information system which is passive, but rather because 'people' asked them to do things that they considered not to be appropriate, however they did not elaborate on what they considered to be inappropriate. As one tutor commented "*SIMS doesn't ask me to do anything that is inappropriate, it is people that ask me to do things that are inappropriate*".

The respondents did feel that using an information system was gimmicky implying it was another example of the frequent changes foisted upon their profession. For example one tutor suggested "*It is part of the new initiatives, flavour of the month*", another responded "*We're always monitoring (it smacks of gimmick to me)*".

### ***On Communication***

When coding the responses about communication the following themes arose: they discussed how they fed back to students; they wanted more information about student achievement; they found it intimidating that Parents/Carers saw the student report before they had; they had concerns about system security; they wanted to reward students; they wanted to use technology.

Whilst some tutors agreed that they fed back to students verbally there was a feeling that there was too much emphasis on the negative issues such as behaviour and that dominated their feedback. Not all tutors felt this way and a discussion ensued about positive feedback for sporting achievement for example, but the tutors did feel the emphasis needed to be shifted to a balanced feedback, not just about 'levels' (*received for poor behaviour*), as one tutor commented "*We don't hear enough about the good stuff*".

### Communication with Parents and Carers

The tutors voiced concern about the fact that Parents/Carers received reports to which they themselves had not had access. This led a real feeling of vulnerability for some tutors who found the interviews at Parents Evening 'intimidating'. In terms of communication there was disagreement about the merits of using email. For some tutors this was a preferred method of communication e.g. "*We would like to use email more, you get a quicker response*", but for others particularly the Year Head, this was not the case. The concerns about email were to do with security; who opened the email? Could it be guaranteed that the appropriate person actually saw the email?

Feedback to students included writing in Planners (A Student Diary), feedback verbally or giving students merits. The giving of merits was less a feature in Year 10 and some tutors were genuinely surprised that one tutor in particular found this an effective way to feedback positively to students, implying that the students in their other tutor groups would not be motivated by merits.

For Parents/Carers communication takes the form of a report but was sometimes verbal if they had to be telephoned. One Year Head was particularly vocal about the feedback of 'No Levels' they said "*Parents get the Roll of Honour but the no levels fell flat on its face, but parents like it*". This had been used previously to feedback positively to Parents/Carers, i.e. the student had not been involved in any misdemeanours. The Year Head felt that Parents/Carers valued this report and was surprised that it did not feature as a communication method any more.

The discussions on communication emphasized the importance of verbal communication, reflecting the relationship between students and teachers. However there was a concern that much of this was based on negative issues such as behaviour or lateness. tutors wanted to shift the focus away from 'levels' towards achievement, but there was not a consensus on how this could happen, whilst some tutors felt they were rewarding the positive already others felt this needed to be improved.

The reporting process to Parents/Carers (which extracts data from the assessment information system) left some tutors feeling vulnerable, because they did not have clear sight of what the report contained.

Some tutors wanted to move to email as a regular communication method, but issues of security needed to be resolved if this was to occur. I asked the questions on communication because I wondered to what extent the information system was used to assist the communication process. However the discussions instead focused on tutor concerns about the nature of their role, about how much communication is related to negative issues rather than positive issues. There was little sense of the information system being a communication tool apart from for some reports to Parents/Carers but this was problematic because tutors did not get sight of the reports before Parents/Carers. In fact this could easily be accomplished because the reports are on the information system when sent out to families, but

accessing them in this way does not appear to be a preferred method. This could be as a result of insufficient training, insufficient access (i.e. access available only in school) or because tutors did not regard the information system as a tool for their use. This gap in use led me to ask the tutors about their perception of the information system.

### ***On The Management Information System***

The following concerns arose from the discussions on the information system: it could be performative to use systems, but they did not want to be performative; the system needs a student interface; they need short bursts of training; they needed more time; access could be problematical.

The Year 10 tutors raised concerns about the accuracy of assessments being made in the school. Confidence was not strong in this year group that assessments matched what the tutors own perceptions of students were, for example, one tutor said “*Some of the levels have no correlation to what is going on in my classroom*”. This concern was not raised by the Year 8 tutors this suggests the high stakes of assessment was felt more strongly as students moved towards national examinations.

### **A Performative Culture**

When asked whether they considered that using an information system with a focus on student data could lead to a performative culture the tutors agreed. There was a concern that schools could be moving towards a performative culture due to external influences:

*Business systems, ideas of the 1970s are being put into state run services.*

*It's a statistical thing to make schools look good, the number of As to Cs.*

*(Tutor Interviews 24-05- 2007)*

This view contrasted with the perception of the Headteacher who did not feel that the local culture was performative.

There were strong feelings about how the information system could be improved for teachers because they found the system difficult. Responses included:

*Get rid of stupid graphics.*

*Behaviour screen too busy.*  
(Tutor Interviews 17-05- 2007)

Tutors did not want to work in a performative culture. They raised concerns about basing targets on one test and the drift towards teaching to test” *We try to educate to Midyis targets but we are basing it all on the results of one test*” suggested one tutor, whilst another said *“We are teaching to pass tests, not for understanding, can’t get through the work fast enough then we have to test”*. This concern was particularly interesting given that Guernsey has abandoned Key Stage testing, I wondered who was imposing these tests, was it Department Heads, the Leadership Team? At this point the tutors did not appear to be talking as tutors but rather as subject teachers. Their anxiety about the use of data was also apparent. They wanted to retain ownership of their mark books and did not want data to be used for analysing performance of teachers *“If we automated our mark books this would be a concern”* said one tutor. There was a real dissonance here between what these tutors were saying and what the Leadership Team had said about the use of data. I raised this issue with the Action Research Team.

#### Access to Information from Home

The tutors re-iterated their need for training and the lack of time available to them to learn the information system for example one tutor said *“We need time to practice”*, another said *“It would help if we could access SIMS at home”*, again repeating their need for access at home. Some of the issues such as whether the information system could manage the process of detentions were subsequently raised with the Action Research Team. Some were issues for me to consider in my

role as supporter, was I developing training that met teachers' requirements, was I familiar enough with their concerns?

The issue of using an information system at home was a concern for me. This was technically possible but had not been implemented in Guernsey at that time. Because school ICT is provided by a managed service, system access became part of a negotiation process. There were competing interests at stake here, the requirements of the managed service to provide a technical solution that they could support within a pricing framework. The requirements of the Education ICT staff to provide a system that could be purchased and supported within budget and the needs of Teachers who used the ICT systems in their daily work. It could be argued that the access needs of the teachers are being relegated below those of the Education ICT Team and the Managed Service. However, it could also be argued that accessing information systems containing pupil data forms part of the work of teaching which should take place in school, in the school day, rather than the blurring of work and home which is rapidly becoming the norm for postmodern employees.

This pointed to a dilemma for teachers; if information was deposited in information systems could it support them in their work if they could not access it any time anywhere? Or should they resist the intrusion of information systems into their homes? In this case it was they themselves that were requesting this access. The nature of teaching currently brings with it a reliance on work prepared or assessments marked at home. The division between home and work is already fuzzy for this profession and the move towards electronic communication will blur this divide further as teachers become available 'on line' for evening consultations or deposit learning resources centrally, as can be facilitated by managed learning environments. The ability of information technology to provide 24 hour any place access for teachers and students alike is a government policy (in both England and Guernsey) to be contested and critiqued, and yet is becoming a reality as a result of the development of managed learning environments. In fact one tutor

interviewed is already voting with his/her feet on the issue of using ICT at home “*I don’t take my laptop home anymore*”.

For the tutors interviewed the issue of access for students was also raised, with a requirement for students to access their own information but in a secure manner. However, they also requested a system that could do everything; both of these requirements indicated a desire for a managed learning environment:

*They need to see their own attendance, behaviour.*

*We need a system that does everything  
(Tutor Interviews 17-05-2007 and 24-05- 2007)*

Tutors voiced concern about the nature of homework setting and whether Parents/Carers supported them in this issue, as one commented “*Planners don’t get looked at [sic] so the parents don’t know that the homework is not done*”. There wasn’t a strong faith in the ability of homework to improve learning “*Does setting homework improve learning?*” some questioned why they were assessing at all. Tutors were also concerned that assessment needed to be reviewed in the light of what the student had achieved throughout their time at school, not just in the light of what had been achieved in one year. This suggested an anxiety about their own accountability for learning, again I felt they were wearing subject teacher hats, rather than tutor hats in this discussion, which suggested the role of subject teacher took precedence.

Tutors felt that Parents/Carers should have appropriate access to the information again suggesting the move towards a managed learning environment. Yet there seemed to be two conflicting views of Parents/Carers here. On the one hand tutors agreed that Parents/Carers did not actually look at the Planners, i.e. a physical document, on the other hand it was felt that Parents/Carers should be accessing an electronic system to check that the student had attended school or to view the Behaviour Log. Is the assumption that because the information comes to them electronically Parents/Carers will be more able to access it, or it will hold greater

legitimacy? What about the needs of those families that do not have access to ICT equipment in their homes? At the time of the research free access was available to all in Guernsey via the library system but it cannot be assumed that Parents/Carers would be more motivated to access information electronically rather than via more traditional forms such as the Planner.

Having discussed the use of the information system I proceeded to ask tutors about their perceptions of the Leadership Team in relation to this use.

### ***On Leadership***

Tutors responses were grouped into the following areas: a concern with performativity; they needed more time; they had concerns about why the leadership wanted them to use the information systems.

In some cases the tutors noted a drift towards a performative culture for example one commented "*The culture of education is that statistics are the answer*". Again this had not been reflected in the discussions with the Headteacher.

There was a feeling that whilst a lot of data was available to them, it was not always used for maximum benefit, as one tutor suggested "*Using data at end of Year 11 too late*".

Again the technical difficulties of the system were raised and the time required using the information system as a result of these system problems "*Monday morning is a nightmare with these systems; it takes a long time for the computers to wake up. It puts 10 minutes on a day*", how could teachers be inspired to log on if this is the reality? One teacher discussed the move to smart boards (electronic whiteboards) and was rueful about the fact that they did not have access to one in their teaching space "*We started off quite quick off the mark with the smart boards, now I can't have one anymore*". I got the feeling that this particular teacher had



expressed concerns about moving to the technology in the first place, but then had a feeling of being left behind which made them feel professionally anxious.

However, despite the technical difficulties the systems presented, they continued to think of ways that they could use the system to their advantage. For example one tutor asked *“Why do we still have paper levels when we should put these directly onto the system?”*

In terms of why the Leadership Team encouraged them to use an information system the tutors repeated their sense that it was a gimmick *“It’s the buzz”* said one; to do with the Leadership Team’s management style and own area of interest *“They’ve got a personal interest, it reflects their interest”*. There was a concern that it might be a case of using ICT for its own sake (the functional over the personal?) and did not help them to learn more about the students.

Tutors did note that their use of ICT had to increase rapidly at the beginning of the academic year because the Headteacher became more dependent upon email following an accident that left her unable to walk for some months *“Circumstances, e.g. more email was sent because the Headteacher was at home, till then so many weren’t using their computers”*.

### **Summary**

The tutor interviews gave me an insight into the difficulties that teachers face when using information systems, i.e. as a researcher I was able to learn about the conditions in which teachers are working and to acknowledge their own concerns as suggested by Everton et al. (2002).

The issues of time and training surfaced repeatedly, as did the shortcomings of the technical infrastructure. Beastall (2006) notes the ICT skills shortage for teachers yet there is a tension between the need for training and the need for that training to be both contextualized and provided in sufficiently small bites so that teachers do

not feel overwhelmed by it. Training has to be considered relevant if information systems are to support teachers in their daily work with students. Training requires “a heavy investment of time and money” (Beastall, 2006 p. 106). However I also found teachers are diffident about their own learning. Thompson (2001) suggests that teachers learn by reflection and by collaborating with each other. The tutors revealed that they learned from colleagues or from trial and error, even when this resulted in frustration. Therefore ICT supporters need to make their own role more collegial rather than positioning themselves as technical experts. The venture to make information systems more useful for teachers needs to be seen as one of collaboration between the educational and the technical perspectives, with the educational perspective leading the technical.

Whilst the information system can be useful for tutors, there was a feeling that it was a difficult system. There was also a perception that using an information system formed part of managerial agenda to conform to currently fashionable education systems thinking. There is a tension here between a managerialist culture on the one hand and a desire to reduce the bureaucracy associated with education on the other. Butt and Lance (2005) reported that teachers in the Transforming the School Workforce project cited excessive monitoring, assessment and reporting as contributing greatly to an increased workload. They found that ICT could be better used to prevent duplication of, and facilitate easier retrieval of data. In their discussion of teacher workload they also note the blurring of work and home life I have already referred to.

A gulf exists between why the Leadership Team at this school encouraged the use of the system, and why the teachers thought the Leadership Team encouraged that use. Tutors were concerned about a drift towards a performative culture. The teaching body at the school comprised a mixture of teachers with experience of education systems in England and elsewhere (e.g. Australia, USA, Wales or France) and teachers whose experience had been gained predominantly in Guernsey schools. Whilst the Guernsey Education Department had been staunchly

against a performative education culture, on the ground these teachers felt they were working in a culture that was moving in that direction. How much of this perception was based on pre-Guernsey experience and how much was based on Guernsey experience is not discernible from these interviews. However, the tutors did not suggest that data and reporting requirements proposed a poor interpretation of the complexity of their central work, as claimed by Blackmore (1997).

The interviews also gave tutors a space to raise more general concerns such as the nature of their pastoral role, the role of assessment in teaching and learning and their anxieties about teaching areas of the curriculum that they considered to be outside of their area of expertise. In my role as education researcher I could only note these concerns and raise them with the Action Research Team. In terms of teachers I had discovered from both the quantitative and qualitative research that the usefulness of information systems has to be negotiated and cannot be taken for granted. My assumptions and the assumptions of the Action Research Team were not the same as the views held by teachers. Whilst some teachers did feel that information systems supported teaching and learning in some ways, the issues of technology, their own learning, the quality and access to training, the education cultural context and the time available all affected the degree to which this negotiation could occur.

Fielding (1999) discusses the importance of collegiality and collaboration in the teaching profession, but he finds that ironically these do not always go hand in hand in schools. Finding collaboration essentially individualistic, he suggests that collegiality is a "joint undertaking informed by the ideals and aspirations of a collective practice infused by value rationality and the commitment to valued social ends" (Fielding, 1999, p.17). He proposes a theory of collegiality that he describes as radical. Of the three views he presents to support this theory, the first finds that teachers can learn with and from each other. In the accounts of learning I have described in the tutor interviews some teachers did learn how to use the

information system from other teachers. However this learning could be construed as collaboration rather than real collegiality and again the question is raised, was this all in the interests of managerialism anyway? The third premise Fielding presents is that true collegiality is inclusive of teachers, students, parents/carers and others in the learning community so that those who fund education, or those who are the alleged recipients of education can participate in the debate. In pursuit of this democratic and radical collegiality I proceeded to interview students and to sample parents and school administrators so that their agency could also be understood (Fielding, 1999).

## **Chapter 4 We are all learners – The Student Perspective**

Student data in the form of: names and addresses; attendance information; assessment and reporting records; and behaviour records, forms the main focus of information systems in schools and hence the perspective of learners is fundamental to an understanding of the contribution information systems make to teaching and learning. In this chapter I present the interviews conducted with Year 8 and Year 10 students. Smyth (2001) calls for the student voice to be heard in the life and curriculum of the school, regarding its inclusion as an antidote to managerialist ideology. Hopkins (2001, p.5) also calls for students to be engaged as “active participants”. Fielding (2001) agrees the student perspective is important but is often overlooked.

### ***The Student Voice***

The interviews that I conducted with the students caused me some anxiety, mindful as I was of Fielding’s (2004) warnings about appropriation, I did not want to consolidate my own power or that of the Leadership Team. I valued the contribution of the students and did not want to speak for them. Ellison (2006) concurs, raising the issue of power differential. She lists different types of student research involvement. Was I at the listening stage or was the research with students dialogic to use Fielding’s (2000, p.408) interpretation “learning with and from each other”? In terms of what use was made of the student interviews by the Action Research Team, I would say it was working towards dialogic. Fielding (2004) also suggests that there are some voices that we would rather not hear, those that might tell us an inconvenient truth. I was very concerned that the student responses should all be valued, regardless of what story they told. Bragg (2001) suggests that when eliciting the Student Voice we should make room to hear the voices of those who produce unexpected dialogue and disrupt our assumptions. When selecting the students that might participate in the Focus Groups, I specifically asked for students that represented a range of academic, behaviour, attendance and social abilities, not a select few.

### ***Selecting Students***

The Deputy Headteacher asked the Year Heads to nominate the students based on those criteria. Whilst I did not validate the selection, I did feel that all human life was there when talking with the students. Before the interviews commenced, I met with the students that had been selected and explained to them the nature of my research and the importance of their voluntary consent to join the groups, just because they had been selected did not mean that they had to attend the discussions. In fact some students did decline and others were selected in their place. These new participants were also given the option of declining the invitation. When reporting the findings from the interviews to the Leadership Team I tried to avoid an adult interpretation of the data as noted by Mitra (2001).

Before undertaking any interviews I wrote to each Parent/Carer to request permission for the student to join the Focus Group. When the consent was received the interviews were scheduled. They took place in the Headteacher's office because she was absent from school at the times of the interviews. I was not really happy about that venue because I considered that some of the group members would regard the space as non-neutral, however the school was not blessed with lots of unused space and I was given that room as somewhere that could accommodate the groups in private. Ironically that privacy could not be guaranteed and the Year 10 interviews were subject to interruption. In acknowledgement of my own power within the research (Dunne et al., 2005) I transcribed the interviews and made copies of the transcripts available to each student that took part before I shared the data with the Action Research Team, asking the students to either telephone or email me if they wanted to make changes to what I had recorded. No changes were requested but that could indicate that either I had made an accurate record of the discussions, or the students did not feel empowered to challenge my record, or they did not consider the verification of the record of sufficient interest to respond. I coded the transcripts by subject to facilitate the analysis, which follows.

### ***Analysis of Student Responses***

The students responded to my interview questions which were grouped by my own area of interest on the following information system topics: Attendance; Behaviour; Assessment; Reporting; Perceptions of teachers. As researcher I had initial control of environment by the way I framed the questions, however the responses from the students challenged this control and their responses opened up the discussion in ways that I had not initially considered.

Figure 8 shows the number of responses on each topic by both year groups.

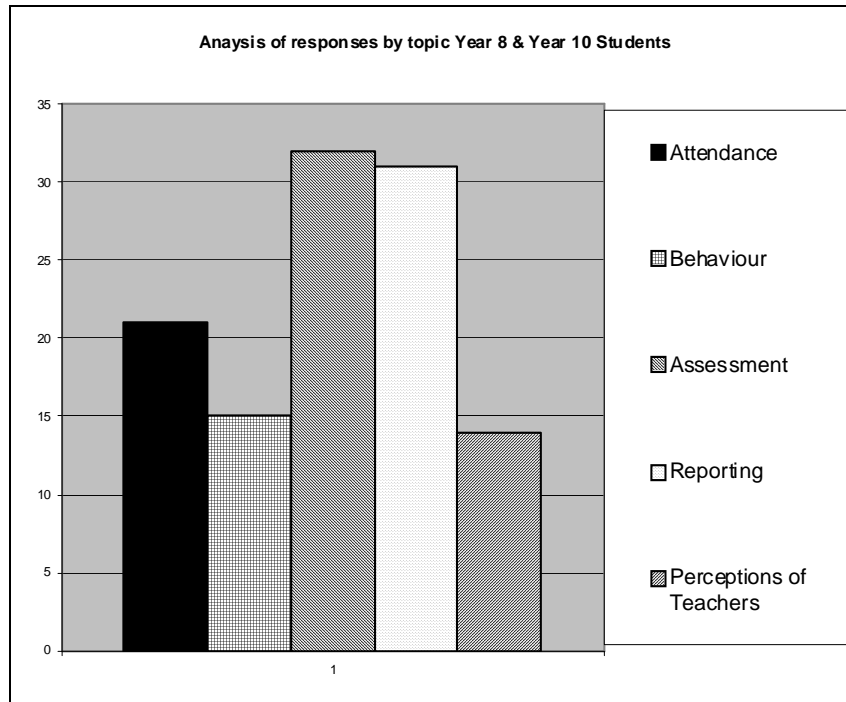


Figure 8 Year 8 and Year 10 Student Responses by Topic

Year 8 students had more responses about assessment and reporting, less on behaviour. Year 10 had similar numbers of responses about attendance,

assessment, reporting and behaviour. Both year groups had a comparable number of responses about perceptions of teachers.

### **Data Analysis**

To move away from a positivist interpretation of the data, I need to reflect on the diversity of the responses, to engage with the why of the student responses as well as the what. Some of the data are but loosely coupled with research into information systems but they highlight the real concerns about learning that these students had. Rather than providing an arena which corralled the students into responding to my questions, the interviews gave a space for them to air their concerns about the daily business of teaching and learning in which they participated. Some of these responses were related to the use of information systems to support learning but some were related to wider issues of justice, representation and respect for learners.

Interpretation of the data shows that students were concerned that their teachers did not always demonstrate appropriate skills, both ICT and in some cases teaching skills.

*The teachers need IT training and anger management training, and how to control a class, and how to use the level system properly.*

*The teachers are ok, quite nice and polite, nice to you. Some seem a bit stressed. When they shout they give you a headache. They take out a bad previous lesson on you.*

*(Year 8 and Year 10 Student Interviews 2007)*

As might be expected when asking students about their perceptions, student justice was an issue of great concern for them. There was sometimes a mismatch between what students felt was appropriate justice and the justice that teachers actually imposed upon them as students describe here:

*Yes it's quite bad. We all got suspended for a week at the end of a holiday. We didn't do anything; I just went out on my boat.*



*We are meant to be learning, he gives out too many levels, if you ask what you have done, he gives out more levels.*

*Yeah the use of levels is inconsistent (the group agreed).  
(Year 8 and Year 10 Student Interviews 2007)*

Year 8 noted that teachers had responsibilities that they should fulfil, which differed from ICT skills. These were about responsibility for accuracy of administrative procedures such as registration which was entered into the information system.

*Yeah there was a house competition, I was doing a drum thing and went to practice before the register was taken. They put me in as absent. My mum, she asked me where I was. She was worried; the teachers must do their bit (take registers and check properly).*

*One time the cover teacher didn't do the register Mrs. XXXX hunted me down. It makes me feel cross.  
(Year 8 and Year 10 Student Interviews 2007)*

Also teachers had the responsibility for discussing assessments with students, which the students felt did not always happen. This theme was repeated in the Assessment for Learning responses in both year groups. There was a feeling that assessment was done to them rather than with them. Both year groups were concerned about how to improve and wanted more advice on how they could improve. Here are some examples of their concerns:

*The teachers and tutors don't discuss predictions. It would help if they discussed how they got to the prediction. We need more discussion.*

*They don't really tell you, they just write it, they don't actually tell you. They should tell you at the end of the lesson so you can work up to the next level.  
(Year 8 and Year 10 Student Interviews 2007)*

Cruddas (2001, p. 63) describes the doubts that students expressed about whether their teachers were really interested in their opinions "Teachers need to talk to us not at us". The students that I interviewed possessed a profound desire to engage in conversations about learning which they said were not taking place, they expected dialogue about learning, but found that this was not forthcoming.

The design of the reports elicited responses from both year groups. Year 8 had strong feelings about the aesthetics of the reports and put forward some interesting suggestions for how to improve these.

*They should put small pictures of your art so mum and dad could see them.*

*You could see where you are going wrong and right. It would be better if it told you more about the grades, like whether you are a high A or a bottom D for example.*

*(Year 8 Interviews 2007)*

Year 10 students believed the report design was to reduce teacher workload, rather than to inform students and parents/carers about pupil progress.

*The teachers can't be bothered to write comments.*

*There should be an easier way of understanding the numbers. They should put numbers and comments and how to improve.*

*(Year 10 Student Interviews 2007)*

The students recognized that parents appreciated some aspects of assessment and reporting, such as the Roll of Honour and Commendations. However this approval was countered by parent/carers' alleged lack of understanding of the reports as these comments from students describe:

*My mum doesn't understand it. The stars you get on the Attendance report, I tell my mum that means I'm good.*

*I don't like it and nor does my parents because it doesn't have any comments.*

*The parents don't understand it. (One student describes how her report was shown to an English school for comparison and the English school was surprised by the format). My dad's wife works in a school. The report is set out very differently they didn't understand the report.*  
*(Year 8 and Year 10 Student Interviews 2007)*

There were genuine concerns about consistency and quality control of both assessment and reporting. Students in both year groups gave examples of erroneous data appearing in reports. This was allegedly as a result of both teacher and ICT error:

*We had a supply teacher for Citizenship and all the students got the same grade.*

*My brother for 1 subject got 4 for homework never being done, but he got excellent for homework quality.*

*(The group agreed there were inconsistencies in the reports).*

*(Year 8 and Year 10 Student Interviews 2007)*

Year 10 gave several responses that indicated their belief that ICT had limitations. This was a particularly interesting response reflecting both experiential evidence and their analysis of how they see ICT being used in school. Although strong users of technology themselves, they did not feel ICT was always used strongly at school. Sometimes this was seen as a skills issue, and sometimes a technology issue. Perhaps this is evidence of the digital native versus digital immigrant scenario that Beastall (2006) refers to in her discussion about the use of ICT in education. Here are some student comments which illustrate their scepticism of the technology and how it is used:

*The computer system is unsafe, unreliable, it's always breaking down.*

*It needs to be used properly*

*(Year 10 Student Interviews 2007)*

I asked the Year 10 students about their use of technology compared to the teachers. 'So the general feeling is that although you use technology well, such as iPods and computers and you are used to that technology, you don't feel the teachers use it so well?'. They confirmed their agreement:

*We could use computers more in lessons, they don't use the smart boards enough, and they need training.*

*(Year 10 Student Interviews 2007)*

Both year groups discussed Pupil Groupings (or setting); however their conclusions were quite different. Year 8 students believed that the assessment data held in the system could assist teachers with deciding how to group students, and help them with their Options choices. These comments present the Year 8 perspective:

*They know what you can do to improve your work and what you are capable of and they can move you up or down.*

*They can predict what might happen in GCSEs  
(Year 8 Student Interviews 2007)*

However, Year 10 students did not believe assessment data was used for this purpose. Instead they perceived setting as being related to behaviour issues, which they thought unfair. One student felt strongly that this was not equitable:

*We are in sets because of our behaviour not because of our ability. It's a bit gay<sup>1</sup> that I am in this set; I would like to challenge this and get moved.  
(Year 10 Student Interviews 2007)*

Both year groups were aware that students have responsibilities but these did not seem to be as numerous as teacher responsibilities. Year 8 students were aware that they needed organisational skills and sometimes lacked these, as two students commented:

*I keep forgetting to bring my homework*

*I forget to bring it in, (another pupil refers to leaving homework in their bedroom).  
(Year 8 Student Interviews 2007)*

Year 8 felt more motivated and rewarded by the assessment and reporting system, as these comments suggest:

*Made me quite pleased – the teachers seeing I'm improving and putting in effort.*

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<sup>1</sup> In Guernsey at the time of the interviews the term 'gay' was used to denote stupid or un-cool, with the connotation of sexuality being at most very weak and in this particular context probably absent.

*Quite pleasing (subjects listed included Art; ICT; Science; Geography; History; Math's; French; Religious Studies). I think it is quite pleasing, you know for the next time you can get a certificate; it might help your choices for GCSE. It is quite encouraging I think, yes, yes.*  
(Year 8 Student Interviews 2007)

Year 8 felt the computerised attendance systems made them feel more secure  
Year 10 found the computerised attendance systems a great irritation. As students become more confident teenagers their security presumably becomes less of a concern, and their *liberty* more of a concern? However both groups discussed teacher skills or responsibilities when questioned about attendance systems. Here the two views are contrasted:

*It's quite good, if you did go to school but something happened your parents would know and could sort it out.*

*It does make you feel safer (all agreed).*  
(Year 8 Student Interviews 2007)

*It's silly; if you are sick it wakes you up.* (This student is referring to the electronic telephone call generated when a student is marked absent with no reason provided by the parent/carer).

*It phoned when I had phoned school (to tell them I was sick)*  
Two students had that experience.  
(Year 10 Student Interviews 2007)

Year 8 students were aware of peer group responses to their assessments but were also confident that their peers had similar ability to them. This issue did not arise with Year 10 students.

Both year groups shared a belief that the computer could reduce teacher to student communication. For example responses on this theme included:

*It stops the teacher talking to you, they tell the computer, not you. You feel they could have told me that (on assessments).*

*Teachers don't talk to you, they know all this stuff about you, they see you as a grade but don't know me. They know the special students cos they don't get into trouble.*

*(Year 8 and Year 10 Student Interviews 2007)*

The last comment above echoes findings presented in The Department for Education and Skills Consultation Document "Making Good Progress" (2006, p.9) where students were interviewed and revealed that *other* pupils were recognised "The most able, the least able, the talented, the disruptive". This left the unrecognised students feeling de-motivated as described here by school students:

*Every teacher knows my name (the group laughs and agrees).*

*Some of the prefects don't know my name. They stop you and you are in trouble but they don't know your name.*

*(Year 8 and Year 10 Student Interviews 2007)*

For year 8 the issue of stress was one that I had not anticipated. Stress was used in the discussions in two ways. Firstly in terms of the students being stressed (i.e. angry, badly behaved) themselves. Secondly their being stressed about assessments and future choices.

*Your parents need to know so they could do something to help you, if you get really stressed they could help.*

*They can predict what might happen in GCSEs I asked 'Are you thinking about your GCSEs already?' Some of us do think about our GCSEs. I think about what I'm going to be doing for GCSE and in Year 9. My brother is in Year 9 and he is going to be choosing his GCSEs.*

*(Year 8 Student Interviews 2007)*

For year 10 there was a concern for some students about school life interfering with working life. Whilst not all the respondents worked, those that did work expressed concerns about school procedures interfering with work responsibilities (e.g. detention times). Year 10 students felt some school procedures were unhelpful. This issue is related in some cases to student justice, the comments below relate to detentions:

*You don't see the point about it being put against a name (you can get a detention for being 3 minutes late). If you get 3 detentions in one half term you get excluded.*

*It makes you annoyed if they call you on the wrong days.*

*They don't let you choose the day (you might have work or something).  
(Year 10 Student Interviews 2007)*

I asked the students if they had after school jobs. Many did, and one who had to go to work at 4.30pm called the other 3 without jobs 'lazy'. Again this discussion was not directly related to the issue of information systems but was of importance to the students concerned and provides insights into the wider arena of factors affecting their learning of which information systems form a tiny and remote part.

The student interviews touched on areas I had not expected to discuss, yet these were clearly issues of concern to them. I encountered the students as: -

Co-constructors of new meanings and shared understandings rooted in the unpredictability of dialogue"  
(Fielding, 2001, p. 150)

To what extent these conversations could affect how information systems support student learning would depend on how they were received by the Action Research Team. Were the students perceived as a data source or as active respondents in this research? (Raymond, 2001). I fed the responses back to the Team with both anxiety about the issues uncovered, and enthusiasm about the wide ranging and thought provoking discussions we had shared.

## **Chapter 5 We are all Learners – The Perspective of Parents and Carers**

I now want to investigate the perspective of the Parents and Carers whose children attended school. As shown previously in Figure 4, the school was keen to include this audience in particular to gauge their support of the new reporting method. Although not active users of the information system they received regular outputs from the system and had valid insights into the benefits and shortcomings of these outputs as partners of student learning. I also include in this chapter an analysis of parents' views about 'Parents Evening' which provides further data on their perceptions of the school reports constructed in the information system.

McCall et al. (2001) suggest the requirement to hear the voices of Parents/Carers has been linked to the school effectiveness agenda. Telem and Pinto (2004) suggest that schools have a duty to communicate to Parents/Carers about pupil learning and progress. Like Telem and Pinto (2004) I did not make checks on Parent/Carer characteristics such as class, age, educational background, profession, social status. The students that attended this school had already 'failed' one social test, the 11 + exam, I did not want to draw any conclusions about their socio-economic background, I just wanted to get the opinions of the parent body. Telem and Pinto's 2004 study suggests a management information system has a strong influence on Learning, Behaviour and Attendance. The Action Research team wanted to focus initially on what influence the reporting to Parents/Carers had on student learning. In their research on reporting to parents, Power and Clark found that: -

Parents often felt that reports were too generalized and were also confused about grading systems and apparent discrepancies in reports, irrespective of the style of the report.  
(Power and Clark, 2000, p. 25)



The research school did have a common grading system across the curriculum, which was carried through from year to year. The Education Department also had a policy on assessment and reporting, but it was being reviewed and amended at the time of the research.

Power and Clark (2000) found that parents struggled to understand the interim reports, suggesting they provided no more than a tick box approach to reporting, with sometimes insufficient information about the grading systems being made available.

I canvassed the Parents/Carers of the student focus groups (Year 8 and 10 pupils). I created a short questionnaire, which contained a mixture of closed and open-ended questions. I wanted to make the questionnaire easy to complete but at the same time I wanted to know what the Parents/Carers felt about the different reports that they received from the school. The questionnaire was sent to 10 Parents/Carers, 6 returned these.

### ***The Termly Report***

Four of the Parents/Carers agreed that the use of numbers made the termly report easy to understand, although one respondent disagreed strongly that this was so. However four respondents also thought that the report could be made easier to understand.

All of the Parents/Carers that responded found it useful to see information from the previous term and found it helpful that information about Homework Quality, Homework Completion, Behaviour and Attainment was reported on.

There was no consensus as to whether changes should be made to the report. The responses were fairly even across the spectrum with the number of respondents disagreeing, matching the number that did not know if there should be change. However, one respondent felt strongly that the report should be changed.

Four respondents wanted to comment on the termly report. Their comments included:

*The number system could be made easier to understand. There are too many levels which can also make a school report impersonal...*

*I would like to see comments from Emily's teachers rather than just a number indicating her effort/behaviour (or at least from her tutor and the Headteacher).*

*(Questionnaires to Parents – 2007)*

Most respondents wanted to see some narrative on the report. This concurred with the tutor interviews, although they did not want the narrative to become onerous. Numbers were used to grade quality of homework, effort, achievement. The number system was used to simplify the report and to show Parents/Carers quickly whether students were making progress from term to term. However the parents' responses suggested that the number system alone was insufficient for them to fully grasp how the students are doing.

### ***The Tutor Report***

Whilst four respondents agreed that they had seen a tutor report, two respondents had not seen a tutor report for their child.

The tutor report did not appear to make it easy to see what targets had been suggested for students, 4 respondents disagreed with the questionnaire statement "It is easy to see what targets have been suggested for your son/daughter".

Three respondents wanted to comment on the tutor report. Their comments ranged from describing their requirements of the tutor report "*Less computerised and a more personal touch with our children's progress*" to not knowing if they had even received one "*I can't actually remember what the tutor report looks like*".

The school had not used the Information System previously to create the tutor Report, which made the comment '*less computerised*', even more interesting. The

summer 2007 report was the first to move to the system (although the school had used a mail merge facility to create tutor reports previously). The tutor Report was separated from the interim termly report. The suggestion was that the report summed up what had been achieved and what the student should be focusing on (targets). From the few responses from Parents/Carers it seems that this report is less than memorable.

### ***The Roll of Honour***

The Roll of Honour was used to highlight particular achievement or effort in each subject. There was a limit to the number of awards that could be made by each subject area. This award seemed to be well received by Parents/Carers. Four respondents had children that had been included in the Roll of Honour.

All respondents agreed that the Roll of Honour motivated students. Five respondents liked the letter that was sent to Parents/Carers to inform them that the student had been included in the Roll of Honour, but one respondent did not know enough about the letter to agree or disagree.

Respondents wanted to comment on how to improve the Roll of Honour “*Excellent idea and the more Roll of Honours a child gets, e.g. a set of six could then have another achievement award,*” suggested one respondent, whilst another said “*Perhaps with a specific reason why child has been included*”.

### ***Reporting and communication***

Whilst four respondents agreed that the information they received about student progress at school was good, one respondent did not know and one respondent did not agree that the information received was good.

Three respondents found the reports from school were of good quality, but three respondents either did not know if this was the case or disagreed that the reports were of good quality.

Four respondents agreed that the information received in reports was consistent and three agreed that it was easy to see how their child could improve at school; however three respondents did not know or disagreed that this was the case. The respondents were evenly split on whether the reports that they received from school were easy to understand. All but one respondent found it easy to communicate with the school if they had concerns about their child's learning.

### ***Conclusions***

Parents/Carers liked the information contained in the termly reports, but wanted to see some form of narrative to accompany the grade system for Homework Quality and Homework Completion. When the tutor interviews took place they made it clear that they do not want to write a lot of narrative each term so a compromise situation would need to be explored.

The tutor report did not seem to make it clear to Parents/Carers and therefore probably to Students, what targets have been set for a student.

Not all respondents appeared to have received a tutor Report, and those that had wanted changes to the format, such as information on progress or behaviour, and a less computerised feel.

The Roll of Honour was very popular with Parents/Carers but two respondents did make suggestions for improvement. Four of the respondents were enthusiastic about the quality and consistency of reports. However three respondents did not feel that the reports explained how students could improve.

Five Parents/Carers that responded found it easy to communicate with the school if they had concerns about learning.

Whilst the research school may consider that the use of comments would prove helpful to parents, they would need to guard against the use of “bland” comments that do not provide learners or their Parents/Carers with direction (Power and Clark, 2000, p.38). The responses of the Parents/Carers on reporting were fed back to the Action Research Team as part of the cycle of planning, action, reflection and then further action.

The data from Parents/Carers represent a mélange of the findings of Telem and Pinto (2004) and Power and Clark (2000). Although Parents/Carers appreciated the termly reports they found the reporting system complex and difficult to understand. This could be perceived as a criticism of information systems but the information system did not dictate the format of the reports to Parents/Carers. It facilitated the production of the reports but the editorial control lay with the School Leadership Team. Unlike Telem and Pinto (2004) I would be hard pressed to draw conclusions about the school prestige with Parents/Carers from the data collected in this part of the research. All that I could say was that the school was perceived as open, easy to communicate with if concerns about learning arose.

## **Chapter 6 Leadership is crucial if information systems are to support learning**

### ***The Importance of Leadership***

In this chapter I want to investigate the importance of leadership in relation to the strategic use of information systems in schools. I also want to understand whether the school leader in school felt under pressure to adopt information systems due to an inherent managerialist culture in education, and to what extent if any, information systems support an ethos of teaching and learning. As will be discovered the Guernsey context again proved to be a factor in these discussions.

It has been suggested with irony that whatever the problem to be found in schools today, the answer is simplistically leadership (Dunne et al., 2005) yet one of the key findings from the Systematic Review of the literature was that Leadership is indeed crucial if management information systems are to contribute to teaching and learning. (Nolan & Lambert, 2001, p.83) concur regarding both the commitment of the leadership and their technical expertise as being 'key factors' that facilitate effective system use. This sentiment was echoed in the interviews undertaken with key personnel.

Rob Couch (Guernsey Education Department) said:

*Leadership is the catalyst, if leadership is not there no matter what the quality of the support, the investment will be a waste of money because the systems won't be adopted to full advantage.*  
(Interview 6-9-2006)

Phil Neal (Capita) said:

*I believe that there are two critical success factors for the successful adoption of MIS in schools:  
The first is Senior Management Team buy-in to using Management Information Systems to reduce workloads and improve learning outcomes.*

*A data confident school is one that can use information in order to identify issues that need to be addressed. With a supportive SMT the necessary investment in equipment and training is assured*  
(Interview 02-04-2006)

Haughey (2006, p.35) suggests school leaders see the use of management ICT as “Transformative” leading to distributed leadership.

Gold et al. (2003) opine that it is important to consider the tensions school leadership teams face. Their discussion on principled principals reflects School Leadership concern with matters such as “inclusivity, equal opportunities and equity or justice, high expectations, engagement with stakeholders, cooperation, teamwork, commitment and understanding” (Gold et. al. 2003, p.136). Hatcher (2005) cites Wright’s response to Gold et. al. which suggests that leadership in schools is not vested in school leaders per se, but is removed to a political level where it is unassailable.

Bottery (2004) argues for a move away from heroic or charismatic leadership where the responsibility rests with one leader, to a distributed form of leadership where all contribute, if leadership is to become transformational. This echoes the suggestion by Phil Neal of Capita that a Senior Management Team buy-in is needed if MIS is to reduce workload. However Bottery (2004) concedes that existing structural arrangements in schools may prevent this ideal from being realised. Distributed leadership is in fact “revocable” i.e. the Headteacher can take it back at any time (Hatcher, 2005, p. 256).

Does the use of a management information system in schools suggest a leadership focus on performance or on learning? Fullan (2003, p. 58) cites Milliband’s position that leadership is the “single most important contributor to school performance”, placing performance at the core of what schools are about, not learning. Sallis and Jones (2003) criticize the technocrats for propagating the idea that successful management is about delivering the right ICT solution, that knowledge management can be reduced to that. Green (2000) provides an example of this type of reductionist thinking when he advocates that school leaders require a passion for ICT. Is it a case of:

The subordination of transformational and distributed leadership to government-driven managerialism.  
Hatcher (2005, p.261)

Or is it, as Johnson suggests (2004), the case that school leaders can oppose government-driven managerialism yet provide school-based initiatives to solve school-based issues, thereby making a difference?

### ***Interviewing the School Leader***

Conscious of Simpkins's (2005) caveat that organisations are too complex and ambiguous to facilitate their analysis solely in terms of leadership; I nonetheless interviewed both the Headteacher and the School Leadership Team. Horner (2003) suggests that the entire team should be studied. I wanted to investigate why they considered the school used an information system extensively. Billot (2005) finds that being a school leader in an island context is different to school leadership in any other locality, the discussions I had with the Headteacher of the research school support that finding.

I asked the Headteacher whether she felt under pressure from market or management principles.

*There is not the pressure of marketing; there is a different climate here. As to management I am aware of management speak and style. It began to kick in with the local management of schools. I don't feel under pressure, I did more so in England..... There is a danger of government emphasis on tables and results. They try to get these regardless of the educational value. The Guernsey context is different.*  
(Interview 23-11-2006)

The Headteacher confirms my feeling that the Guernsey context is significant. She has worked in a leadership role both in the English school system and the Guernsey school system. She notes that *management speak* can be filtered through to School Leaders via official training or events such as conferences: -

*If you have been on the LPSH (Leadership Programme for Serving Heads) or attended a big conference that type of thinking occurs.*  
(Interview 23-11-2006)



However she asserts that her leadership style is instinctive, bearing out Gleeson and Husbands' (2001) theory; that *management speak* does not necessarily change her practice. There is no sense of irony from her here that the LPSH is in fact an example of the managerialism so criticized by education commentators such as Thrupp (2006).

*I don't come back from conferences and change my practice straight away. For example distributed leadership – I don't actively do it but I do it.*  
(Interview 23-11-2006)

"Distributed leadership" is the latest fashionable idea for leadership theorists (Harris, 2006, p. 43). This School Leader does not see a focus on quality in teaching and learning as indicative of managerialism but as a natural progression for education.

*If we are not doing the best for the students what are we doing? Students are at the centre of all we do. The needs of parents are important that is why we should strive to improve. Management speak can pervade education (but sic) good teachers have always had students at the heart of their work, they look to do the best for the students, but previously we didn't have accountability.*  
(Interview 23-11-2006)

Here she uses the very language of performativity eschewed by Ball (2001). Whilst much of the literature is critical of the post 1980s emphasis on managerialism: (Wrigley, 2004; Sergiovanni, 2003; Blackmore, 2004; Thrupp and Wilmott, 2003; Gleeson and Husbands, 2001), this Headteacher is critical of previous school values which don't put the student at the heart of learning.

*The grammar school or independent school ethos of old was that education was very subject driven rather than the whole child, they weren't teaching but lecturing.*  
(Interview 23-11-2006)

Her insight is that a focus on quality is to support the enabling of: -

*A student to become a balanced well rounded person – this is the ultimate outcome but it cannot be measured.*  
(Interview 23-11-2006)

However she is aware that educational outcomes are not always viewed in this way, and a focus on more prescriptive definitions of learning outcomes may well have a negative effect on students.

*The danger is that outcomes become limiting (by an exam driven society), a student will respond....*  
(Interview 23-11-2006)

This awareness is countered by a concern that students can also be limited by not achieving examination success.

*It is still so exam/result driven. There is a constant balancing act between these two [results vs. whole child], there is a danger that if you go too far towards the ideological approach exams won't matter.*  
(Interview 23-11-2006)

Whilst displaying the commitment to equity and social justice described by Mulford (2005) she notes here a balance to be struck between ideology and exams. This made me wonder whether the Headteacher felt under pressure to demonstrate performative outcomes rather than focus on for example structural inequality, or the impact of intensification of teachers' work, or student participation and retention rates, or pastoral care, all of which may affect student learning (Blackmore, 1997). Again the significance of the Guernsey context was raised.

*The Guernsey context is different. Exam results do matter but the Department is not rigorous in following them up. There could be a danger that things become a bit cozy. We talk of results.....*

*People make positive comments about our school. We get a lot of praise for the wider things which pervade the right kind of ethos, community, social values matter. There are times when I think 'Why aren't our results improving' we are being sucked into providing a happy school but are our expectations high enough? I don't think pressure is that great externally, but there is a pressure there. I want our results to be better to give youngsters more options. We are educating the whole child but an important part of that is exam work.*  
(Interview 23-11-2006)

What was missing from this response was any reference to the fact that the students at the school had not passed the 11+ examinations, which are a feature of the Guernsey education system. Secondary schools on the island talk about

their efforts to build self-esteem in students that join in Year 7. The focus on a 'happy school' rather than on examination results may be partially linked to this need to repair damage done by a divisive testing regime at the end of Key Stage 2.

I asked why the school did not focus on mentoring students likely to get a D grade (I had believed that they did not) in their Key Stage 4 examinations. This is a common practice in English schools (cf. Gleeson and Husbands, 2001, p. 12).

*We haven't avoided it. (I have had an ideological battle over this for years) I am against just working to improve school results for performance tables. However what I recognize is the importance that many doors open with C grades – it goes back to raising expectations. We identified those on the C/D borderline and looked at ways of boosting that.*  
(Interview 23-11-2006)

The Headteacher regarded this as work in progress, to be continued. However she was clear about the rationale for this *"If this is done for institutional reasons it is wrong, but if it is for the students then it is okay"*.

The Headteacher's emphasis is on the importance of attainment for securing the best outcome for a student's future, not for Performance Tables.

Having established the Headteacher's ethos on learning, I went on to investigate whether using a management information system was considered an integral part of that ethos. I asked the Headteacher what she was looking for from an information system and whether the current system provided what she requires. She identified the need for data to inform teaching and learning, and suggested that the current system offered a good service but could be improved. For example access to the system could be easier, and she required a data extraction tool for the assessment information rather than the current system of scrolling through a lot of data.

The Headteacher described the limitations that using a system imposed as being based on the school's limited understanding rather than on the design of the system itself.

*The limitations are our limitations as to what the system can do. There is a slow process of educating our colleagues.  
(Interview 23-11-2006)*

Isdale (1996) is unlikely to concur with this view that the limitations are those of the user rather than those of the information system. I wanted to develop further my understanding of why the school uses a management information system so extensively, so I interviewed the School Leadership Team (including the Headteacher herself). The Leadership Team identified several reasons why the school was a mature user of information systems. They said that the current software is easier to use (the early adoption of the latest version of the software seems to have contributed to pervasive use of the system). They also highlighted regularity of use as a contributory factor. Now that teachers are using the system frequently it becomes more of a routine task, not so difficult because if a member of staff can navigate one part of the system they are usually more able to navigate another part.

The collegial and collaborative nature of the school was also identified as significant in the way the information system had been adopted. It was suggested that a two-way reinforcement of system use existed. Key members of the school staff body were enthusiastic to use the system so the leadership team was supportive of that enthusiasm. These staff tended to be 'critical friends' whose opinion was valued. This in turn led to the leadership team keeping MIS on the agenda. They set expectations for the use of the systems but acknowledged the importance of support for staff. The expectations of the leadership team are carried through. The school also has a buddy system, in other words a collegial approach to learning for staff.

However when looking at the usefulness of the system, shortcomings were identified. These included: required functionality that had been omitted; problems in sifting through large amounts of assessment data and the inability to access the system from home.

There was also a feeling that parents/carers needed to be more closely involved with the information the system could provide. There wasn't a clear view on how this could happen, although mention was made of a product that gives parents/carers access to data extracted from the school information system.

## **Chapter 7 We are all learners: Administrative Staff**

In his study of the use of ICT in schools Gipson (2003) notes that one school regarded itself as a learning community, it had transcended its former embodiment as a learning centre only for children. Bolam et al. (2005) describe professional learning communities as having inclusive membership where support staff are seen as integral to teaching and learning. This concept of a learning community, wherein all participants regard themselves as learners shaped my next enquiries. In 2004 Strickly surveyed 50% of Birmingham primary schools; he reports that school administrators make information systems work because they have to in order to do their jobs. I wanted to find out how administrative staff found the experience of using an information system, and what influence it had on their workload and their own learning, Isdale (1996, 1999) has studied this experience in depth, her work provides a theoretically rich framework which I will use to shape the presentation of the Administrator's responses.

### ***Isdale's conclusions***

Isdale makes the following judgments about school administrators and management information systems:

- Workers and the management systems construct the work together, each dependent on the other;
- The system is the responsibility of the administrators because they have the lowest status in the organisation and are not able to reject the information system agenda;
- These systems are dependent upon the institutionalization of women's work;
- The learning that takes place is by the administrators, but they have the work of convincing teachers of the necessity of information;

- Administrative work is fiddly and tedious and management information systems have a negative impact on learners (in this case School administrators);
- Two systems are required, a manual and a computerised system and workers will constantly have to update skills because the systems keep changing;
- Systems are not delivering the efficiency and productivity that government departments may have expected;
- Human intervention overrides the system security.

Isdale's research helped me to see the importance of including School Administrators in my own study. I wanted to know how much the administrators I supported shared the same frustrations and insecurities as she documents. I asked the administrative team questions on the following issues:

- The information system;
- The data;
- Their work as administrators.

The questionnaire was sent to the three administrators in the research school. They pooled their answers and responded as one team rather than three separate respondents. This was their decision and is indicative of their collaborative working. They share a collective 15 years of experience of school administration work.

***Workers and the management systems construct the work together, each dependent on the other***

Eraut (2006) notes the difficulties in representing competence, as the nature of what is work, what is competence, frequently changes, and may be dependent upon certain conditions being in place. Isdale (1999) suggests that in terms of school administration the workers and information systems collude to construct the work. My experience of working with schools led me to question this statement. The nature of what is administrative work in a school has certainly changed in the

last 20 years, but this is not as a result of a management system, it is a result of government policy as more work is delegated to the school. The development of school information systems has followed government policy and my findings in the Systematic Review of the literature suggest that government policy dictates reactive system design. However, the work of school administrators has not been constructed with the management system; the work is dictated by government policy and by each unique school context. When asked if the information system created new work for the school administrators they did not regard the information system as creating new practices, rather these practices were generically created.

*We are constantly updating therefore supporting current practices and creating new systems.  
(Questionnaire 5-2007)*

However, the information system created new tasks such as data checking and data inputting. The school administrators did not construct these tasks they were imposed upon them by the information requirements of the school and the Education Department.

***The system is the responsibility of the administrators because they have the lowest status in the organisation and are not able to reject the information system agenda***

I would concur with Isdale here that generally administrators have the lowest status in a school. Their salary structure and working conditions such as having school holidays imposed upon them but with loss of pay infer an organisational condescension about their role. Ironically using a school information system seems to have raised the profile of the school administrators in school, yet this enhanced profile served only to emphasise the considerable gap in salary between them and the teaching staff that depended on them. They are regarded as experts in this field (Strickly, 2004). Other school staff look to them for assistance, for example the tutor interviews noted that when teachers wanted help they asked the administrators. In the research school the role of administrators was highly regarded, the Headteacher interacted with the administrators regularly and they



had informal and relaxed communication. However, there were no administrators in the Leadership Team, whereas in my experience outside Guernsey school, a Bursar or senior administrator may effect this representation, for example. It is too simplistic to say that administrator status explains why they do not reject the information systems agenda, if we are to proceed with Fielding's (1999) vision of radical collegiality all members of the school community should be valued and we should be working to raise the status of administrators, if the information system agenda can help to achieve this then the administrators are not likely to reject it.

***These systems are dependent upon the institutionalization of women's work***

This sweeping statement manages to degrade the status of all women and makes assumptions about who is working in schools and in what context. The research school has a leadership team comprising three women and two men, the Headteacher being female. The Year Heads that I interviewed were also female. In short women in this school held a variety of roles from leadership to teaching to administrative to librarian. Would Isdale be surprised to learn that the cleaners in the school are mostly male members of staff? A generalization about women's work in schools is inappropriate shorthand. The basic pupil data in information systems have historically been populated by school administrators who in many cases may be female and may be from a particular social class. However data in these systems is now created by many other school staff particularly teachers, many of whom hold leadership roles and who comprise both genders and differing social classes.

***The learning that takes place is by the administrators, but they have the work of convincing teachers of the necessity of information***

In contrast to teachers, the school administrators had attended training courses to learn the information system. When asked which courses they replied "All". They attended courses that took place at an external training venue, although they noted that a permanent training venue would improve the training for them. As the Guernsey Education Department did not have access to a permanent training

venue, training had been provided in hotels, in schools and in meeting rooms. By removing themselves from the school office environment they were able to learn the systems, yet teachers did not share this enthusiasm for off-site training. Certainly it would be difficult to provide effective training in a busy school office where the interruptions from telephone, staff and pupils are constant. However this willingness to attend external training may be another indicator of the difference in status between administrators and teachers in schools. The administrators' consent contrasts their lack of autonomy with the autonomy of teachers who did not feel compelled to learn the system away from school.

Having learned the systems, the administrators perceived themselves to be more efficient and productive. However they did not describe a need to convince teachers of the necessity of the information. I would suggest that it is the Leadership Team that has adopted the role of convincing teachers of this need.

***Administrative work is fiddly and tedious and management information systems have a negative impact on learners***

Some administrative work in schools is indeed tedious. However by implication that does not mean that an information system has a negative impact on learners. When asked if the information system helped the staff by freeing them from repetitive tasks they were able to identify precise examples of tasks that the information system helped them with.

*Yes, printing address labels, mail merge, exclusions, and reports.  
(Questionnaire 5-2007)*

So there may well be some fiddly and tedious work in school administration, but the information system did not appear to have a negative impact on the administrators,

***Two systems are required, a manual and a computerised system and workers will constantly have to update skills because the systems keep***

**changing**

When asked if they felt the need for a manual system to guarantee their electronic system the staff answered:

*The only manual system we use is filing student/personnel details.*  
(Questionnaire 5-2007)

However they also noted that they kept manual records in case of emergency:

*We have a hard copy of contact details and fire drill registers in the office. Also whole school timetable, and emergency registers.*  
(Questionnaire 5-2007)

The manual records had a specific purpose implying that they were appropriate alternatives rather than duplication. The administrators were confident that the system could be relied upon. When asked if they could consider transferring all data and records to the information system they replied:

*Yes, with the exception of outside agencies i.e. referral from school psychologist and parent correspondence.*  
(Questionnaire 5-2007)

They found the information system held the most up-to-date data, and they took responsibility for maintaining its currency:

*As and when advised either by staff or parents the database is updated.*  
(Questionnaire 5-2007)

The information system certainly changed regularly. This required frequent updating of skills. However the administrative staff that responded to the questionnaire did not seem overly concerned about the regularity of changes, they were only concerned that the changes did not happen when they were actually at work in the school:

*Would only cause a problem if updated during office hours.*  
(Questionnaire 5-2007)

They did acknowledge that they spent time updating the database, but suggested that the amount of time required was not onerous (although they did not specify how much time was spent):

*To maintain an up to date database we do spend time updating but not all the time.*

*(Questionnaire 5-2007)*

The administrative staff did not suggest that collaboration to solve system problems was unusual, rather that they worked collaboratively to maintain competency:

*All the time so that we are all familiar with the changes.*

*(Questionnaire 5-2007)*

They also relied upon support from the Education Department MIS specialists for problem solving. They valued this support but noted that a regular drop-in session would enhance their learning further.

The respondents did not answer the question 'Do you feel the manual system is more reliable than the electronic system?'

***Systems are not delivering the efficiency and productivity that government departments may have expected***

In this school the administrators considered that using an information system made them more productive, freed them from repetitive tasks and changed the way that they worked as administrators. For example they felt the system was:

*A very effective way of retrieving all information required, and producing statistical reports, attendance.*

*(Questionnaire 5-2007)*

They described the changes the system brings to their work as:

*Definitely for the better because it saves time and we have instant access to data.*

*(Questionnaire 5-2007)*

Isdale (1999, 1996) may consider that the requirements of an information system puts pressure on administrators to create new working practices, but these administrators considered such change as a normal part of their working:

*We are constantly updating therefore supporting current practices and creating new systems.*

*(Questionnaire 5-2007)*

Rather than being challenged by this updating they found that it

*Enables us to move forward and gain knowledge on the use of the system.*  
(Questionnaire 5-2007)

They did not prefer to use manual systems to the information system despite the changes and despite the fact that the technology “Can be very slow”, repeating the frustration with the network system identified by the tutor interviews.

### ***Human intervention overrides the system security***

Data Protection laws exist in Guernsey as in England (the Guernsey Data Protection Act was adopted in 2002, somewhat later than the English Law). Data held in an information system were extremely sensitive and subject to the Data Protection Act. However despite Data Protection Protocols the administrators did feel it necessary to share passwords, which is an example of human intervention overriding the system security. The administrators suggested that this was necessary because:

*As a team (within the office) and having to access and share various information, we are able to have access as and when required i.e. in emergency – sickness.*  
(Questionnaire 5-2007)

In ICT terms this sharing of passwords would be considered inappropriate but the administrators interpret system security in terms of making sense of their working lives, i.e. the personal takes precedence over the functional.

### ***Collegial but not equal***

The three administrators in the action research school displayed a collaborative approach to their workload. They were enthusiastic about the information system and enjoyed learning more about how to use it to help them in their daily tasks. They willingly shared their knowledge within their own administrative team. However they were also relied upon by teachers and the leadership team to support these professionals in their own use of the information system. Whilst the information system offered the school administrators an enhanced status in terms of their ICT expertise, this did not in turn raise their status in terms of pay and

conditions in relation to the professional colleagues that they assisted. There remained a large gap between the pay structure of a school administrator and the pay structure of a teacher.

Whilst it was an Education Department policy to introduce management information systems to schools on the island, there was no evaluation of changes to job roles running parallel to this policy. The question of how the policy was being adopted was not asked. The only question was whether schools were adopting the systems. The Department wanted quantitative data not qualitative data on this subject. Having invested so much money in the infrastructure for ICT, the Department may have expected to make economies in the way that schools were administered (for example saving money on printed school registers by using the information system to record attendance). To undertake a job evaluation of school administrators may have resulted in costs that the Department were unwilling or unable to bear.

To summarise, the work of the administrators has changed but it is as a result of government policy generally rather than as a result of school information systems. Although regarded as system experts by other colleagues, the administrators' general status, in terms of pay and conditions, was not enhanced by their knowledge of information systems. Yet it was this very lack of status which contributed to their enhanced knowledge of the systems because they attended external training that their teacher colleagues had not. Despite being frustrated by technology the administrators did not prefer manual systems.

Having gathered the data from Students, Teachers, Parents/Carers, School Administrators and School Leaders I want to move forward in the next chapter to reflecting upon what these data tell us.

## Chapter 8 Action Research – Reflection

In this last of the data presentation chapters I describe the way that the action research team worked on discussing and responding to the data that the project produced. This therefore relates directly to the second research question:

How does the way that school information management systems are adopted, developed and used contribute to the mission of the school? To what extent does it form part of an emphasis on: performativity; on school improvement; or form a part of the transformation of the teaching and learning agenda?

Sallis and Jones (2002) state that information can only become knowledge when intellect is applied to that information and it is interpreted. Having gathered data from students, from tutors, from Parents/Carers I returned to the Action Research Team to engage in a process of reflection and interpretation. We had several meetings to discuss each aspect of the research.

Date of Meeting	Event	Action
June 2006	Invite The research School to participate in research	School agrees to participate
September 2006	Meeting with Action Research Team to discuss research project	Action Research Team begin to shape research questions and how to address them
October 2006	Interview with Leadership Team	Gathered data from Leadership Team on their perceptions of school information system.
November 2006	Interview with Headteacher	Gathered data from School Leader on her perception of school information system.
January 2007	Students Invited to Interviews	Gathered data from students on their perceptions of school information system.
February 2007	Presented Student Responses to Headteacher then to Action Research Team Members	Planned for discussion of these
March 2007	Students Responses evaluated	Reports were changed to incorporate colour to differentiate between each year group. Agreed to investigate student and

		teacher communication.
April 2007	Parent Questionnaire	Gathered data from students on their perceptions of school information system
May 2007	Administrative Staff Questionnaire	Gathered data from Administrative staff on their perceptions of school information system.
May 2007	Tutor Interviews	Gathered data from tutors on their perceptions of school information system.
June 2007	Presented Data from Parent, tutor and Administrative Staff to Action Research Team	Planned for discussion of these
July 2007	Parent, tutor and Administrative Responses	<p>Agreed to add one comment area to tutor Report.</p> <p>Agreed to provide training for data analysis for tutors.</p> <p>Agreed to provide some time for tutors to monitor reports before they are sent home.</p> <p>Agreed to include explanation of the Roll of Honour in the School Prospectus.</p> <p>Agreed to build time into the report cycle for target setting.</p> <p>Agreed to clarify the role of the tutor.</p> <p>Agreed to work on communicating set information more efficiently.</p> <p>Agreed to include data handling training for departments.</p> <p>Agreed to manage positive communication about students more effectively.</p> <p>Agreed action required on uncompleted homework.</p> <p>Agreed to investigate data monitoring at the start of the new academic year.</p> <p>Agreed to provide more training for teachers on what data existed in the information system.</p>
August 2007	Researcher left island due to contract termination	Unable to follow up next stage of reflection on preceding actions and planning of subsequent actions.

Table 3 Chronology of Action Research



### ***The Student Responses***

The Team were somewhat crest-fallen as a result of reading the Analysis of Responses from Y8 and 10 students. They pointed out that the questionnaire responses they had received from the Y8 parents' evening did not indicate the level of dissatisfaction suggested by the students.

There was amusement about some of the comments e.g. the Deputy Head Teacher did not 'hunt anyone down' as suggested by one Y10 student. They questioned the veracity of some of the responses, but the one issue that the whole leadership team agreed on was that of the lack of communication between some teachers and some students. They felt they could imagine a student making some of the comments, and they were concerned about them. This issue was in many ways the most important one to emerge from the conversations with students, yet it was not specifically about information systems, again echoing Fielding's (2004) emphasis on the importance of listening to students but being open to what they are saying. The Headteacher felt that the responses gave the school a lot to think about and much to include in a school improvement plan. However I was at pains to point out that this was just a small selection of students, and the Deputy Head Teacher and I had been keen to include a wide variety of student experience of the management information system.

### ***The Parent Responses***

The Team were not surprised that Parents/Carers said that they would like comments to appear on the reports, such commentary having been a part of report writing tradition for many years. However, they wondered if the commentary actually told Parents/Carers anything different from the data already on the report? Did Parents/Carers want such commentary just for re-assurance, for the personal touch?

It was agreed that the tutors did not see the report in sufficient time before it was sent out, there was an awareness that the report needed to be available to tutors but at the same time there was desire to avoid printing out hundreds of copies.

In terms of the comments about the tutor report, the Team agreed that Parents had probably forgotten that they had received a report during the previous year (the tutor report is produced annually, unlike the interim report which is termly). They agreed that the report could have an end place for a signature with a comment from the tutor. However they did not want to go back to asking staff to provide comments on each interim report. This reluctance was echoed in the Teacher interviews. There was also a feeling that the sampling date may have affected the Parent/Carer response to questionnaire namely that if the questionnaire had been sent just after the summer term, they would have just received the tutor report so it would have been more memorable.

### ***The Tutor Responses***

I reported the results to the Action Research Team as a single data set, with all comments reported anonymously. Nevertheless, it was quite obvious to the team when a particular member of staff had made a comment because of his background coming from a particular country.

The Action Research Team noted that the role of the tutor in talking to students is very important, to identify concerns. It was felt that the school had the right data but might not be using it so well. The school had embarked on Assessment for Learning training; it was hoped that Assessment for Learning would make it clear to students what was needed to improve.

It was agreed that the targets in the Tutor Report were not very recent; the Team felt that they needed to look more at target setting for students. They wanted three tutor driven targets which the tutors provided and this meant that tutors had to talk to students' subject teachers; the school needed to work towards this. The team

felt that they might need to build time into the tutor report cycle so that enough time was allocated to target setting.

The issue of tutors chasing absences invoked a lot of discussion within the Team. Absence monitoring was only a problem for those tutors not chasing up absence on a weekly basis, which tutors were supposed to do. It was the chasing up of historic absences that were proving to be problematic; the school was working on this to eliminate missing data. The Team felt that tutors should want to be on top of absence monitoring and to know why students had been absent. They also felt that the tutor comments about chasing absences showed a lack of appreciation of the existing load on the administrative staff. They felt that the role of the tutor covered the pastoral role of managing absence and if it was managed regularly it should not be onerous. It was felt that this might need to be re-emphasized with tutors. The team agreed that the management of the attendance of students that attend the College of Further Education had been problematic and they were still working on that issue. They also agreed that the management of the information surrounding which student was in which set needed to be worked upon.

In a discussion about Excel, the group agreed that it was acceptable to extract data from the information system to use in Excel, but because of the lack of data validation in Excel, the data would not be returned to the information system from that source.

There was a subsequent discussion about how Personal Social and Health Education was taught in the school and whether tutors were expected to teach this part of the curriculum (the answer being no, in this particular school PSHE was taught by specific staff within the staff body, and by external colleagues, so there was surprise that this concern had been raised by tutors).

The group felt that tutors had enough information about students to be able to set targets. There was a feeling that the Leadership Team was using the information

system regularly but that class teachers were not using it regularly. The Team also emphasized the collegial atmosphere in the staff marking room – a room equipped with computers, desks, photocopier and space for working, particularly at the time of the first interim report. The mark room was seen as a great facility, which encouraged teachers to help each other (although the Team noted that not all teachers were supportive of each other, as evidenced by some of the tutor comments).

The Behaviour Logging was time consuming for the Head of Year, this needed to be simplified. The group agreed that more (in-house) workshops were needed as the academic cycle moved around. There was a discussion about communication: do the tutors hear enough about the positive achievements of students? Existing communication mechanisms included word of mouth; subject teacher; specific achievements; staff briefing; Head of Year; Teacher/tutor communication. However quite often communication took the form of whingeing. It was agreed that often the negative information about students was more memorable. The school used to have the Wonder List, which could be used to write anything about student achievement; it might be possible to have a similar list in the future.

### ***The use of School Information Systems***

The Team discussed the fact that in the past there had not been a culture of accountability for teachers but they thought that in teaching now there had to be accountability. Was this the “persistent and harping rhetoric about accountability” (Smyth, 2001, p. 130) indicative of a managerialist culture? As the Action Research Team consisted of members of the Leadership Team it is probably not surprising that this view was held even if some commentators would find it a timid acceptance of managerialism. The Team felt that in terms of data a lot had to be taken into consideration. They believed that teaching was not judged on only one set of data for example the number of GCSE A\* to C grades. Using data allowed the school to ask questions not to beat teachers. The team felt that perhaps they should communicate that emphasis to staff but there still had to be accountability. The

Team felt strongly that there was no *Golden Age*, it did not exist. In fact in Guernsey because Key Stage testing had been abolished in favour of Teacher Assessment, schools were testing less.

All involved agreed that a managed learning environment was needed. They discussed the scrutiny of 'Planners' (Student Diaries) by parents/carers (which the school had monitored) and agreed that parents did not always check what was in the Planner. Whilst the tutors had suggested a detention monitoring system would be useful the school had investigated the one provided by the current management information system and found it to be too cumbersome.

The team was not convinced by the tutor comment that English schools were setting less homework. They felt that more independent learning and peer assessment allowed staff to mark less to achieve more. It was felt that teachers might need more substantial teacher assessment for varied ability.

The team regarded it as part of the change in culture to use emails in school, the desktop was opening up to the 21<sup>st</sup> century. They considered the question of whether email got in the way of communication. Some team members were concerned that email could lead to the loss of the personal touch. However, they conceded that email was a useful mechanism to push information to all staff. One member of the leadership team discussed a dislike of the use of email to alert her to cover requests. She preferred the previous system of an orange paper slip so that she could tick off what cover was due. However, the group did discuss the number of tasks that teachers had to manage daily and agreed that email facilitated the ordering of these tasks. Like many things email was seen as useful but within the context of what was being asked, the type of job, the nature of the request.

The leadership team agreed that they saw the use of school information systems as helpful in learning about the student. The tutor met with a small group of

students and could get to know them well, whereas the Leadership team was accessing a much larger group of students (the whole student body of the school) and the system helped them in quickly identifying students and issues such as behaviour or attendance or assessment.

They were surprised that tutors considered the use of information systems as fashionable; they did not consider it was their own personal love but something they needed to access. They considered it added value offering a view of what needed to be done. Having current up to date data at their fingertips helped them to be effective and efficient. Also it could improve communication. Parents could be 'at the door' but the leadership team could have lots of information at their fingertips, this was very powerful. This could be about behaviour or attendance it could improve communication and made them more effective. It helped to have informed data about situations, not just a gut feeling. The links to student information were very useful to get a complete picture of an individual student. Of course the information was only as good as the people that input the data.

### ***Actions Resulting from the Data Analysis***

We discussed the way forward for the research, I suggested that we could not canvas parents about everything that the student interviews touched on but it might be a good idea to ask parents their opinions about the new reporting system. The team thought this would be a good idea. We also agreed that it would be useful to interview the Year 8 and Year 10 tutors to find out what use they made of the information system. We wondered whether tutors felt confident to talk to students about their learning (i.e. did they have enough information). What did they perceive to be their role in relation to Students and learning? Were they just responsible for delivering the reports? I also asked if I could interview the administrative staff, which was agreed.

In the light of the comments the Year 10 students had made about the Yellis (Year 11 Information System from the CEM Centre at Durham University), the team felt

that it might be helpful to have a leadership view on Yellis and how it was used in school. This was to be actioned by them.

The student interviews challenged both my and the school's everyday assumptions about the value of the reporting system being used. They were vocal in their disapproval of some aspects of the reporting system, although they liked the Commendation and Roll of Honour systems. The Headteacher noted that she was not sure herself whether the actual Year 10 certificates were sent home or if only copies go home, she required more information on this.

In response to the student complaints about the reports the school subsequently adopted the use of more colour for reports. Although they could not take up the suggestion of using copies of the student's art work in their reports, they used a different colour for each year group report. This was also repeated in the certificates given for attendance and punctuality.

Following the tutor responses, the Team agreed the reporting process needed to be managed better for tutors as well. They wondered if a data sheet could be set up specifically for tutors and then exported to Excel for them to sort and use as they preferred. It was suggested that training could be provided for staff on that; perhaps staff could use data on only two A4 sheets?

The Team agreed that a specific time was required for tutors to look at the reports; they discussed the possibility of cancelling assemblies to enable tutors to go over the reports with students. They discussed the reasons why the Roll of Honour was awarded and wondered if the reasons were sufficiently explained in the School Prospectus. The Team wanted to ensure that everyone understood the thinking behind this award and agreed to change the Prospectus.

They agreed that teachers needed short workshops (for example after school). They suggested using induction for new staff as taster sessions but actually to

open these up to any interested staff. They also agreed to investigate ways of improving communication about students.

The team agreed to make structural changes to the reporting processes based on the suggestions of students, parents/carers and tutors. They also agreed to implement changes to the way positive information about students was communicated to teachers and to communicate changes about teaching groups more effectively. They agreed that more training was required for teachers in data handling, in the role of the tutor and in exploring the information system. Thus the knowledge from generated actual and planned action also illuminated a gap in the Senior Leadership Team's knowledge of existing school processes as to whether Year 10 certificates went home with students.

The Team was keen to implement the proposed changes and then meet again to assess the impact of these. Thus, whilst some of the knowledge generated from made for uncomfortable reading it was found to be acceptable none the less and used to plan future development.

In summary the research team agreed to change practice in the light of the responses from Students. Although they valued the responses from Parents/Carers they did not want to implement all the changes suggested but did acknowledge a comment from Tutors would be informative. From the Tutor responses there emerged a lack of clarity about their role and about their use of data which the research team wanted to address. There was awareness that the culture of teaching had changed and that information technology supported such change. However there was a realisation that teachers themselves needed support in how to handle data, echoing the findings of Kirkup et al (2005) or Thorn (2002). In the following chapter I move on to discuss how I changed during the research project.



## **PART 3: DISCUSSION**

### **Chapter 9 Technology, Performativity, School Improvement – Are they a continuum?**

#### **Introduction**

In Chapter 8 I described the action research leading to change for the school. However the research process also led me to change. As I learned more about schools and the challenges that they face, my enquiry became less about technology and more about schools. This chapter investigates the pressure on schools to perform and what that challenge means to me in my work of supporting school colleagues.

#### ***The system world needs to support the life world***

Fielding (2000) reminds us that the functional must be for the personal. Sergiovanni likewise exhorts us to let the life world steer the system world or the school character will be eroded. The life world provides the foundation for human capital or the systems become ends in themselves demanding obedience to the systems' requirements (Sergiovanni, 2003). Schools should expect information systems to support their work of teaching and learning. Thompson (2001) confirms the need for information systems that work in such a way as to avoid a negative impact that intimidates and diverts rather than informs and invigorates. Teachers need to be able to interpret data as part of the performance management agenda. Thus information systems are located in the arena of supporting performance.

The DfES (2002) suggests that information-rich schools can use data to inform decision-making and see school information systems as a valuable tool for raising standards and measuring attainment, bringing the technology back to the performance arena. DfES (2005a) continues that monitoring and tracking pupils' progress is essential for school improvement and raising standards. Higham et al.

(2001, p. 77) research describes respondents being convinced that monitoring and target-setting improved student knowledge, attitudes and examination performance as well as “transforming the relationships between staff and students”. Kirkup et al. (2005) found that teachers agreed that data was useful at both school level (for resource management, performance management, evidence based discussions) and at pupil level for target setting, identifying both group and individual weaknesses and informing decision making about resource allocation and teaching practice. Carter (2005) promotes the idea that information technology can assist the reflective practice when informed by data, but only narrowly. If information systems are a tool for performance, they cannot be deemed to be supporting the life world, unless the life world is deemed performative.

In November 2006, the school where the Action Research took place engaged teachers in a discussion about data at a staff meeting. At the meeting the leadership team suggested that the reasons for using data in their school were: -

- For more effective teaching and learning
- For more effective intervention
- To set targets that challenge

The discussion was informed by data provided from Cognitive Ability Tests and included evidence of verbal, non-verbal and quantitative ability. Data on student learning styles was also provided. The school expected the data to make teaching and learning more effective. For example, they said that the Key Stage 4 Yellis data were used to motivate students, these data were discussed at Parents' evening. The school was aware of the need to develop all the students' abilities and suggested that data could highlight problems but not solve them. The teachers at the meeting asked if they could be made aware of the students with varied verbal and non-verbal scores. They also wondered how they would access the data in the information system and what the moderation process would be for KS3. I investigated the explicit claim that the data was motivational when I interviewed

the students later in the research and noted the teachers' requirements for access to data.

### ***The Use of School Data***

There is now pressure on schools to use assessment and contextual student data. Ofsted (2003) cites good use of data as a basic feature of school practice. The High Reliability website provides several case studies of data rich schools ([www.highreliability.co.uk](http://www.highreliability.co.uk)). The suggestion is that data rich schools use information in decision making throughout the school. The site gives advice on what data to collect and reminds schools that data can be used to identify students on a GCSE C/D borderline, can identify strengths and weaknesses of departments and provide evidence of school performance, thereby suggesting a clear link between information and performance.

Tarleton (2006) describes using data and an information system for identifying teacher practice so that it can be replicated. His school has even re-branded House Heads, a term which used to imply a pastoral role, as Performance Leaders. This school uses data to get students on track, to push them to achieve, they use Parent Evenings to concentrate minds on how to achieve results. The use of the information system is yet again clearly linked with performance.

Walsh (2002) claims that the effects of incorporating ICT into schools should not be underestimated, for it enables broad changes for example in school processes. McCormick (2004) whilst sceptical of grandiose claims for ICT's effects on teaching and learning notes that it may help teachers by facilitating the storage and recording of data on student learning and enabling feedback to learners. Petrides and Guiney (2002) suggest that schools need to move through collecting data, to processing that data as information via a mélange of human interaction and information technology, to the point that the information becomes knowledge. This will occur as a result of context, synthesis and reflection. It is when these data are transformed into knowledge that teachers can use them for the benefit of students.

They raise the question of whether the school culture is seen to value information or whether information is ignored at best or sabotaged at worst. The action research school culture valued information as evidenced by their willingness to participate in process and engage with the findings. However, it is unlikely that every teacher was able to contextualise, synthesise and reflect upon the information to the point that it was used by all teachers for the benefit of all learners.

In 'Teachers pick up on data mining' (Guardian 19<sup>th</sup> June 2007, p. 14) John McGowan remarks that "the actual quality of the teaching is still in the hands of the teacher, the data will only help them to do the job". At the start of my own learning I had taken the government agenda very much for granted. Professionally I had not questioned the status quo even if personally I had concerns about the emphasis on performance. Professionally, I have tried to support schools' use of information systems from a learning perspective but am conscious that the data from these systems can be hijacked for other purposes.

### ***A Learning Culture does not have to be performative***

The preceding discussion suggested a link between information and performance, which needs investigation. Blackmore (1997) defines performativity as focussed on outcomes, rather than processes and critiques it for: restricting the dissemination of knowledge to what can easily be measured; focusing on individuals, be it teacher or school, rather than on the collective; and for the narrowness of what it defines as 'good' schooling or school leadership. Jefferey (2005) and James (2000) describe how the discourse has pervaded education. McNess et al. (2003) in their research with teachers in England, France and Denmark, found those in England particularly felt under pressure from a focus on performance.

Perhaps using an information system is by its very nature an instrument of a performative culture. The data from school suggests two perspectives on this issue, the leadership team cite the Guernsey context as preventing this, but some

teachers suggested using such a system is indicative of such a culture. If Blackmore (1997) is correct in her assertion that it is both a product of, and produces information and communication then I may be falling into an iterative performativity myself. When I began my research I expected to include learning outcomes in my research question: - To what extents do information systems impact student learning outcomes. Fielding (2003) would admonish me for the use of impact which he describes as from the same stable as performativity and to paraphrase Gleeson and Husbands (2001) not all student outcomes are measurable. Brooke Smith (2003) concurs and reminds me that the use of outcomes to measure schools effectiveness is not neutral. Elliot (2001 in Gleeson and Husbands, 2001, p. 193/4) explains that learning outcomes need to be viewed within their “contextual complexities”. He refers to the technologies of audit that performative cultures rely upon. Is an information system not an example of those technologies?

These are most apparent in the pressures on individuals, formalized by... **databases**, to make their contribution to the performativity of the unit.  
(Ball, 2001, p. 214)

Ball (2001, p.216) accuses the “technical intelligentsia” of driving performative practices into teaching practices. Fielding (2001) describes the poverty of performativity in relation to target setting in schools. However I cannot agree with either Ball (2001), or Blackmore (1997) that using an information system closes down the possibility for relating practice to philosophical principles such as social justice or equity. In my quest to help schools to use information to support teaching and learning, social justice and equity are the very things I am working for. So I rephrase my research question. *To what extent do information systems contribute to Teaching and Learning?*

Thrupp and Wilmott (2003) critique performativity for: restricting the dissemination of knowledge seeking only to disseminate what can easily be measured; focusing on individuals, be it teacher or school, rather than on the collective; and for the

narrowness of what it defines as 'good' schooling or school leadership. They suggest the abolition of performance management and performance tables, and a move away from summative assessment. They want the focus to shift to children's requirements as social beings. Broadfoot (1999) develops the discussion on assessment further, noting for example the work of Black and William (1998) on assessment for learning. In Guernsey in an education environment that never took up the mantle of performance tables, an abolition of testing at each Key Stage, and a move to assessment for learning rather than assessment of learning, have not been giant steps. It would be wrong to suggest that an internal market does not occur, because families can exercise a choice of schools if their chequebooks can run to an independent education. However, within the maintained sector there is no sense of a market for education, 'results' are not published, all schools are valued by the community, evaluation of schools is achieved by a self evaluation framework that is validated i.e. it is the school self perception that is inspected. The research school did not perceive itself as a performing school but the Headteacher did note a balance to be struck between focussing too much on either performance or educational ideology.

Jefferey (2002) describes teachers re-claiming their right to teach creatively. I am not advocating that teachers do not teach creatively. I am endeavouring to discover is whether using information systems contributes to teaching or reduces it to measurement, monitoring, and accountabilities which weigh heavily on the shoulders of teachers and learners alike. Does the use of such technologies ensure that only certain types of information are legitimized? This question is important because we are all learners. In the Guernsey context the information system is used in schools predominantly for internal data. Even the data which is reported back to the Education Department is not published externally in the form of performance tables (although the local press do publish Key Stage 4 results).

***School improvement does not mean that 'results' will improve exponentially***

Lauder et al. (1998) critique the school effectiveness movement for holding a view of school quality that is reduced to test and exam performance. It could be argued that the use of information systems in schools forms a part of the school effectiveness agenda, by producing data on school 'results' such as examination results or Key Stage assessments which is greatly facilitated by the systems. Whilst not focusing on information systems per se, Selwyn and Brown (2000) note an explicit link between educational ICT and a drive to improve standards in their research across 7 countries. Gray et al. (2001, 2003) would certainly disavow anyone of the belief that past pupil performance can guarantee future success. They suggest that pupil performance is not based on an upward trajectory but that school improvement comes in "bursts" (2003, p. 88). Gray (2005, p. 40) goes on to suggest that "capacity building schools" focus their improvement efforts on issues evolving from a concentration on teaching and learning.

***School Effectiveness***

The term 'school effectiveness' is contentious and its validity cannot be taken for granted. It is not that schools do not wish to be effective, but rather the presumption that this can be a menu driven process, divorced of context is problematical. The assumption that one school can improve simply by copying what another successful one is doing, has been challenged by the research on joint practice development (Fielding et al., 2005). Even the term successful school is contested, and can be viewed from several viewpoints. Wrigley (2004) rails against the school effectiveness research tradition for being based on a positivistic Perspective, that fails to take into account the multiplicity of schooling outcomes.

Morley and Rassool (1999) share these concerns. They worry that school performance is the main concern of the education system and doubt that a "universal formula for educational change" can exist (1999, p. 1). They see terms

such as improvement or effective as “not value-free and indeed are saturated with power relations” (1999, p. 135).

Gorard and Smith (2004, p. 208) note that gaps in attainment must be “contextualized and hedged around with doubts”. They continue that the outcome of the school effectiveness debate is the “undisputed” (2004, p. 215) awareness that non-school contextual factors count when researching student achievement. Whilst other commentators may indeed dispute their findings, they are correct in their assertion that “effectiveness is not about counting and comparison” (ibid, p. 219). Rea and Weiner (1998) concur that the effective schools paradigm ignores the context in which learning may take place. For example, Levačić, and Woods (2002a) cite the importance of local school hierarchies when analysing the ability of schools to improve. Morley and Rassool (1999, p. 47) find that education is moving in the direction of a “de-contextualised and content-less” programme of incessant learning. Brooke-Smith (2003) says that traditionally the school effectiveness movement has aligned schooling with goals and tasks, a simplistic expectation that schools can do better which ignores their complexity. Some of this anxiety was described by the teachers that I interviewed in the research school who wanted to note the importance of the learning that had taken place before they commenced teaching students.

Fielding instead pleads for a “radical break” from the school effectiveness paradigm (2001, p. 12), which he describes as seriously flawed in its insistence on a ‘concept of education as “measurement driven” (2000, p. 413). Gray (2005) suggests that relating issues to teaching and learning will improve the prognosis, echoing Fielding’s belief that focus should be on teaching and learning. Similarly in his discussion on “social capital” which he suggests forms the “glue” on which schools function (2005, p.43) Gray echoes Fielding’s (2001) discussions of the personal over the functional. Elliott (1996) declines the premise that educational outcomes can be divided from educational processes as proposed by the school effectiveness framework. Slee et al. (1998) find the paradigm is riddled with errors



such as: the exclusion of some learners based on their gender or race; its normative and regulatory perspective; its procedural focus, which ignores the actual purpose of education – that of steering learners to adulthood. Barker's research (2005) de-bunks the myth that a strong correlation exists between effectiveness and examination results.

Hargreaves (2003) has contrasted professional learning communities with performance training sects. He suggests that a learning community can turn information into knowledge but critiques the idea that teachers should look at achievement data with a view to adjusting their teaching. Brooke Smith (2003) sees the rate of information flow as a major control parameter, but believes this can be influenced to facilitate the complex organisation's move to double loop learning. By contrast Davies and Ellison (2003, p. 19) advocate the use of data at the process stage so that it can change teaching "to improve a child's performance". They suggest that data can be formed into useful information. They go on to list the data requirements of a school (ibid. p. 56) but do not link these to an information system, only a loose connection to *school records*.

In contrast to the school effectiveness paradigm, some commentators consider the school improvement paradigm is not necessarily reductionist. Hopkins (2001) suggests that if critical theory is emancipatory, then so is school improvement. Thrupp (2003), whilst complaining about the managerialism of education policy, suggests that teachers don't accept the level of responsibility for student achievement proposed by the school effectiveness paradigm. However, he then rounds on teachers and Headteachers suggesting that they do need to understand how they can or cannot make a difference. I am conscious that he would be likely to refer to me as a subtle apologist Thrupp (2005) in that I am concerned about structural inequalities for learners yet continue proposing the use of systems which are deemed to support managerial education. Am I critical enough of the school effectiveness paradigm? I don't endorse an emphasis away from the "affective and aesthetic" described by Morley and Rassool (1999, p.48) towards an endorsement

of performance by “selecting out systems” (ibid p.56). I don’t consider myself incapable of understanding the “complex societal power networks, practices and processes” (ibid) at work both within schools and surrounding them.

Lauder et al. (1998) describe three models of the school effectiveness paradigm: The Received; Heretic; and Contextual. They call for a model that admits the significance of teacher professional autonomy and the uniqueness of each school. Hopkins et al. (2005, p. 24) opine that schools do indeed need assistance in moving from data rich to information rich states, from an ability to collect data to the ability to interpret and analyse it to inform teaching and learning. The quantitative instrument in my own data collection revealed very few teachers who used information in this way. MacGilchrist et al. (2004) find that the standards based reform movement is responsible for a blame culture that holds schools and teachers accountable for narrowly defined learning outcomes. However they do advocate a strategy of monitoring pupil progress, including the systematic collection of data (ibid p. 21). Gleeson and Husbands (2001, p. 15) cite Gray’s team, who suggest that in the past “schools in difficulty gave insufficient attention to the analysis of data”, but regard continued improvement as a cultural rather than technical activity.

### ***Am I Endorsing School Effectiveness?***

I find myself struggling with the competing ideologies at work here. Am I advocating the use of information systems to support effectiveness? Or am I encouraging schools to use systems to support teaching and learning based on awareness that teachers do not hold total responsibility for learning and that students bring their own contextual satchels with them into a learning environment? I agree with Gleeson and Husbands (2001) that despite the prevalence of sophisticated mechanisms for tracking examination and test results we need to focus on other desirable outcomes of schooling. Furthermore I agree that schools are “complex, multi-objective institutions with a commitment to enhancing the quality of pupil learning experiences and their long-term life

chances" (ibid, p.17). It is for that reason that I encourage schools to use information systems.

I encourage the use of information systems from a learner perspective. By that I mean that I help schools to set up the systems to track learning progress, to set up reward systems for learners, to track attendance, to report to learners and their parents and carers. These are not to shore up school performance but to highlight areas that learners may be finding problematic and which may hinder their achievement and attainment; or to celebrate their achievements and encourage them in their learning. Tracking progress in reading ages for example can highlight students that are not moving forward with reading which will hinder their learning in many other areas of the curriculum. The tracking system does not address the learning problem but can help schools to be aware of it. Celebrating achievement can be motivational for some students as shown by the Year 8 students in the research school, or the children interviewed by the Department for Education and Skills (2006) who described feeling de-motivated and would have like to have been rewarded. My own practice is not based on performativity but could be hijacked for this purpose.

## **Chapter 10 Conclusions - We are all learners - I am a Learner**

I return now to the stated aims of an Action Research project as quoted by Kemmis (2009) who suggests that action research aims to change: practice; understanding of practice; and the conditions wherein practice occurs.

### ***Change practice***

I began this research project because I wanted to improve my own practice. To do this I had to first de-construct my own assumptions about school information systems. Before commencing I had taken for granted the benefits of these technologies would be obvious to all and my original plan was simply to provide a recipe for schools to follow in order to maximise these benefits. As I explored the literature it became apparent that many commentators contested this assumption. Commentators such as Ball, Blackmore, Elliott, Fielding, Merson, Thrupp, and many others consider these technologies are instruments of an insidious managerialism that has taken schools over, byproducts of government policy that forces schools, and their staff and students to perform, to produce data for performance tables, which are false indicators of a good education. This reductionism ignores the sense of education being a socio-cultural practice (Morley and Rasool, 1999). In order for me to change my practice, I had to acknowledge and investigate this view of information systems. To understand further I asked one of the original software developers of SIMS, why he had developed the information system. His response was that he wanted to reduce the time spent on writing reports yet increase their quality. This suggests that the original inspiration was to develop the technology to support an activity that was a part of teaching and learning before School Performance Tables and local management of schools were introduced (SIMS celebrated its 21<sup>st</sup> birthday in 2007 pre-dating the 1988 Education Reform Act). It cannot be denied that information systems have been hijacked to support government policy, but that was not the starting point of these systems. However the developer conceded that government policy had made it

necessary for schools to keep information systems updated which had benefits to the schools. The aforementioned commentators would doubtless contest these supposed benefits.

If I am to change my practice, I need to be reflective about its shortcomings. One of the main findings of was that teachers are reluctant to engage with training in the form that it currently exists. Whilst in Guernsey, I put on a training programme that was advertised in the Education Department Training Diary and on the web site, with what I had hoped were tempting descriptions of what the courses would contain and at whom the training was aimed. No matter how many times I suggested that the courses were for teachers, the take-up by classroom teachers was minimal even though teachers with specific responsibilities such as Assessment, Cover, Timetable, or Examinations did attend. It seems that teachers do not want an A-Z course that covers everything that the software can do. They want short courses that are delivered in an environment that makes sense to them i.e. in their school, so that they can contextualize their learning. Such a training programme is labour intensive and will have implications for schools and education departments' resources. I try to emphasize the educational benefits of using school information systems when I am training school staff, I now accept that these are not a given and that I have to defend my stance against the charge of managerialism. However I do not consider that a lost cause as Thompson (2001) suggests teachers do need to turn information into action and need skills in interpreting information, part of my role is to help them to achieve that.

My practice as a researcher has also been changed. At the start of the research I wanted to stay in the shallow waters of positivist methods where I felt comfortable. As I learned more about methodology I felt better equipped to think about research from outside of my own box. This was in part due to reading but also due to peer learning. Action research enabled me to participate in research rather than lead it. I would have liked to undertake more observation and to move through a second cycle of action and reflection. With hindsight I may have approached the research

differently. I don't think now that I would start with a questionnaire. In my initial investigations into grounded theory I considered it an unlikely choice for the kind of researcher I thought I was and dismissed it. However I am now more curious about methodology and would certainly consider grounded theory where the theory emerges from the data. A feminist methodology would not be incongruous with research into ICT systems in schools as these are designed and implemented predominantly by males and often championed in schools by male managers.

One criticism of my methodology by commentators has been the perception that this research should be framed as case study rather than action research. Yin (1994) suggests that case study facilitates a study of real-life and complex phenomena, using multiple methods, which describes the research I undertook. Flyvbjerg (2004) finds the case study gives the researcher space to re-visit initial assumptions and amend their theories, in that light the research presented here could be considered as case study as I had to address my own taken for granted assumptions and amend my initial hypothesis. Tellis (1997) explains that the researcher can be an active participant in the phenomenon being studied and again using that criteria the research could be considered to be a case study because I participated in the research rather than lead it as I initially expected to do. However I persist in my framing of this study as action research, in that not only did the school change as a result of the research findings, but I changed both in terms of my thinking and my professional practice. The action did not just happen to 'them' a notional other, but to me the alleged expert. Adelman (1993, p.10) concurs that action research does not 'emulate' case study. Elliott (1993, p.180) suggests that in the critical emancipatory school of action research the external researcher is either expected to produce organisational generalisations for management purposes or is expected to side with the oppressed employees in opposition to management. However I have not tried to take either stance; rather, I have attempted to construct my own living educational theory from action research as espoused by Whitehead (1989), based on critical self-reflection. The research

has enabled me to provide a rationale for my practice which McTaggart (1989) describes as a requirement for action research.

Another methodological criticism of this study is that action research is an iterative process and I did not undertake a second tranche of planning and further action due to my re-location back to England. Whilst it is true to say that action research infers a double loop, researchers should be wary of doing research that is structurally right rather than research which provides meaningful knowledge. McMahon & Jefford (2009) agree that whilst action research implies a second tranche, it is critical reflection that is of importance rather than the number of steps taken to reach it. They note that the rules of action research are rules of art not science (ibid, p.370). Selwood & Twining (2005) argue that it is flexibility that is important when conducting action research and as a result of my change in circumstance I had to be flexible in the way I undertook the research. Whilst cognisant of the criticism, I continue to present my findings as action research none the less.

### ***Change the understanding of that practice by its practitioners***

#### ***School Leaders***

In terms of changing the understanding of the practice of using information systems in schools I have learned much from those who have kindly contributed to this research, whether their role is that of School Leader, Teacher, Student, Administrator, Parent/Carer, Software Developer or Education Officer. School Leaders increasingly rely on information systems to give them a holistic view of what is happening in their schools. This does not preclude the socio-cultural nature of educational practice. The research school is a model of a learner and community focused school. Anecdotally, I could say much about the charity events that the students themselves organise, the shows and contests that celebrate their acting, singing and dancing talents, their sporting achievements and their extraordinary artistic abilities. These form the bedrock of the learning experience and are much celebrated both in the school building in the form of electronic and

static displays and at formal events such as Parent Evenings, Assemblies and Prize Giving Ceremonies. Notwithstanding this focus, fast access to accurate information helps these School Leaders to make decisions and to learn about the students in their care. In the 21<sup>st</sup> Century in Guernsey and elsewhere students' lives are more complex than ever before. Issues of race, gender, family background, mobility, student aspirations, learning styles and prior attainment are all brought into the classroom with the student. School Leaders increasingly use information systems to get an informed picture of what is happening in relation to the student body, not just relying on gut feelings. It does not mean that they are not having conversations with students, teachers or families, but that those conversations are based on information. The information can be critiqued on the basis of who supplies it, who validates it, who gives it meaning, information is a social construct, but this is the case regardless of whether or not it exists in an information system.

### ***Teachers***

From Teachers I have learned that very few currently regard a school information system as a tool for supporting teaching and learning. The systems are too complex for them to engage with. There are exceptions to this finding though. In the quantitative study, one teacher said that they used the data in the information system to 'inform planning, allocate staffing to support or extend children's learning' and many said that they used the information system regularly in their work. Teachers are not usually so au fait with information systems to appreciate that they have a multi-user, multi-dimensional database at their fingertips. They want tools that will facilitate their teaching and no matter how many bells and whistles the information system has, if it is too difficult for them to use they will vote with their feet. Yes some of them are rueful about this, suggesting the onus is on them to learn the system, but some are not, believing instead that an information system should not need much training if it is 'sound'.



### **Students**

From students I learned much about their relationships with their teachers and how these influenced their learning. Much of the literature about Managerialism in education, rails against the ethos of accountability and emphasizes the relationships that good education practice builds upon, but listening to these students made me aware that the power relationship between teacher and learner is not always an equal one. A contrasting view is that of Hin-Wai Yung (2002) who describes two versions of teaching; one of which is that teachers are protecting students' interests when teaching, the second is that they are protecting their own self interest at the very moment of teaching. The idealized vision of teacher and learner engaged in a relationship of mutual respect is in short supply for some learners as the comments from the student interviews indicate. In terms of accountability, the students suggested ways that they could address the power balance. These included exiting the teachers and not allowing the teachers to shout at them. These students felt the same unhappiness about the power relations as the student researchers described by Cruddas (2001) when she says that the young women did not feel they were treated fairly by adults.

Of course some of the student comments were humorous, but beneath the humour lay a deeply felt sense of injustice. The students wanted the teachers to tell them how they can improve, not in a performative way, but rather because they wanted to learn. My questions to students were about information systems but their responses were about learning. I cannot generalize about how students find information systems supportive of their learning because different students have different responses. For example, younger students felt comforted by an electronic registration system which alerts their Parent/Carers to a daily absence, whereas older students found this an invasion of their privacy. Students found the interim reporting system lacked consistency and accuracy and wanted more from it. The students shared Fielding's (2001) request for dialogue. What I found so enlightening from these conversations was the students desire to engage with and improve the outputs from the information system that affected them. McCormick

(2004) drawing on the work of the Assessment for Learning movement notes that just giving learners a score is insufficient, a view reinforced by these student. They want to engage with their learning and with anything that supports learning.

### ***Parents/Carers***

From Parents/Carers I learned that they valued the Roll of Honour awards, which rewarded their sons/daughters for their achievements across the curriculum. They welcomed the opportunity to engage with the debate suggesting system improvements. They overwhelmingly wanted narrative to accompany the grades on the interim reports. Parents/Carers did not find the tutor Report as memorable as the interim report, and ironically suggested they required a 'less computerised' report. Parents/Carers that responded to questionnaires were supportive of the school and of their sons/daughters learning. They wanted to know what the assessment system means, how the student can improve and how to follow up with teachers. However, not all Parents/Carers are so committed to learning, 45% did not attend the Parents Evening and 40% of the Focus Group Parents did not return the questionnaire that I had sent to them. Learning is based on a relationship between student, teacher and family; each partner brings something to the learning experience. Not all Parents/Carers feel either empowered or committed to engage with schools, and this distance will be a factor in teaching and learning regardless of what outputs they receive from a school information system. Bourdieu & Passeron (1990) described the relationship between the culture of education and the culture of well off families which they can use to keep on improving their privileged social status:

...decisively consolidate their advantage by investing their cultural capital in the sections most likely to secure it the highest and most durable academic profitability.

Bourdieu and Passeron (1990, p. 82)

It may be the case that the Parents/Carers that did not respond felt they lacked the necessary “linguistic and cultural capital” to engage in the debate (ibid p.99).

### ***Administrators***

School Administrators work in a complex web of interaction between Student, Parent/Carer, Teacher, School Leader, Education Department representative and the Public. Whilst their work is often “fiddly and tedious” (Isdale, 1996) they display remarkable powers of diplomacy, are able to multi-task and are enthusiastic learners. Their work is not constructed by the information system but they use it to help them to be more productive and efficient. Here then exists the “Weberian rationalization” that Bottery (2004, p. 30) refers to, and the fact that they have developed expertise in information systems could be construed as indicative of the technocratic elitism described by Blackmore (1997). Smith (1999, p. 7) somewhat cynically notes that “learning is the way to stay in employment”.

The school administrators learned new systems but they inferred that this helped them to move forward not just to stay employed. Is it only a certain select few then that can benefit from ‘learning’? Are the ‘women’ working in the school office to be kept down? Their responses suggest an enthusiasm for learning and for expanding their skills, which should be acknowledged and celebrated. Are educational researchers in danger of replacing technocratic elitism with academic elitism? One type of knowledge should not take precedence over another, invalidating the learning that the administrators have achieved by denouncing it as skills based is as much an example of reductionism as any that Thrupp and Willmott (2003) provide. Is it appropriate to divide learning how from learning that, if one type of knowledge can help learners to move to the other? I learned from the administrators that information systems do help them in their work, saving them time and giving them access to data. Although the caveat applies that the data are a construct of the social entities that provide and process them, nonetheless the administrators are engaged in learning in as earnest an endeavour as that of the teachers or students.

### ***Software Developer***

From the software developer, I learned that in my role of ICT Support Agent I am held as accountable for the benefits of school information systems being disseminated, as are school leaders. I accept the responsibility for encouraging schools to use information systems to support teaching and learning which is why I began the research. The developer uses the language of school effectiveness 'learning outcomes', 'positive benefits' the use of data to 'combat Ofsted'. This language confirms the link between school information systems and the school effectiveness paradigm, which will render the systems distasteful to both education commentators and teachers alike. It seems that even the teacher that was instrumental in starting SIMS has succumbed to managerialism, which may illuminate why its development path is so closely linked with government policy.

### ***Education Officer***

From the Education Officer, I learned that the nature of why Guernsey schools would use an information system has changed over time. When he initially advocated the use of such systems the Officer considered they solved a relatively simple problem, that of school administration. However, he conceded that schools now have more complex requirements and data helps them to see themselves objectively. The Education Officer made an explicit link between data and monitoring school performance, which he notes is an Education Department responsibility. Yet he simultaneously criticized performativity and suggested ways forward that avoided a performative culture.

I found these two positions incongruous but indicative of the conundrum that is education in Guernsey. There is a departmental ambivalence which wants to provide a local education perspective but within the context of a global education arena.

I also learned that the Education Department does not consider the development of ICT in schools is an indicator of industrial managerialism, but rather a tool that can facilitate the individualization of learning, the school ethos will dictate how the tool is used. Finally, I learned that the role of an ICT support agent is subsidiary to that of school leadership, that the role facilitates use of information systems but that school leaders ensure this use.

***Change the conditions where the practice occurs***

So what use is this knowledge? Can I suggest that what has been collaboratively discovered will improve either the research school or indeed any school which uses a school information system? I am hopeful that as a result of this research I have improved my own practice. I have looked at my own assumptions and found them wanting in many respects. My original Blairite 'What Works Wins' perspective has changed over the period of as I have learned the importance of context in education. I do not present my findings as a recipe for successful use of information systems for other schools to follow. My original research questions were:

***Question 1***

To what extent do school information management systems contribute to teaching and learning?

***Question 2***

How does the way that school information management systems are adopted, developed and used contribute to the mission of the school? To what extent does it form part of an emphasis on: performativity; on school improvement; or form a part of the transformation of the teaching and learning agenda?

I would suggest that school information systems do contribute to teaching and learning but not yet to a large extent. The reason for this is that they are still perceived as difficult to use by some teachers. Some teachers that used an information system in Guernsey suggested it did support their work. Some of these were school leaders some were not. Some students felt supported by the use of information systems in their school, some did not. They did not view the use of systems as alien to learning; they wanted to know how to move forward with their learning and valued some of the information provided as outputs from the system. However, they wanted to know more about how to move forward and required more dialogue with their teachers.

Information systems are also seen by some teachers as instruments of a performative and managerialist culture which has pervaded education. This culture elevates technology (the functional) over learning (the personal). Not all teachers viewed the use of information systems as indicative of such a culture however. In some cases, the systems are seen as part of the transformation of teaching and learning, helping school staff to know more about the learners in their charge.

In terms of the administrative staff, information systems helped them to improve their work. It freed up time spent on routine tasks and facilitated collaborative working. In terms of teaching and learning, these staff became both teachers, knowing most in the school about how the systems worked, and the learners, always keen to update their skills.

The data have to some extent answered my research questions, but have also helped to pose a new, third question, which in many ways is the most important of all.

### **Question 3**

How can we improve practices so that information systems better contribute to teaching and learning?

To address that question we need to provide training which is both contextualized to the environment of the learner and is provided in bite size chunks so that teachers are not overwhelmed. This training should focus not just on how to do something (button pushing) but also on why this would be done (the educational focus). For example, training on how to track learning would start not from the perspective of the technology, but from the perspective of whether tracking learning is valuable. What insights does it provide? Often the use of information systems is concerned with data entry, but the emphasis needs to move from that to data analysis focusing on what the data tells the teacher and how they use that information to support their teaching. Thus their training will need to provide them with the skills to interpret the data, not just to enter it. This view is shared by Kirkup et al. (2005) who recommend support in the use of data.

As a result of this finding, the action research has changed my practice. I no longer write lengthy manuals which explain each of the software 'features', I no longer run whole day training courses, I have also moved away from the remote training venue to work solely in a school setting. I run short learning events that can have a particular focus, but also provide a workshop environment so that teachers can bring their own learning requirements. I also offer informal training sessions wherein I go to the teacher, into their classroom and work on their particular training need. I have found that my willingness to move into their environment has helped colleagues to feel more comfortable positioning themselves as learners. I have been able to do some very detailed data analyses with colleagues, which have given them valuable insights into teaching and learning. For example I recently worked with a Modern Foreign Language teacher to analyse differences in attainment of students that studied Spanish over a three year period. Our findings led her to ask questions about her own practice. Of particular note is that she asked me to assist her in this analysis because she had attended a workshop session I had run and felt comfortable sharing student attainment data with me.

Change of that kind will have implications for the technologists that support schools using information systems. In the Systematic Review (Appendix 1) I have drawn attention to the skills deficit found in this area. Is it possible for technologists to grasp the educational implications of the technology? To improve practice in this area will require more training and again the emphasis will need to be on education not on button pushing. This could take the form of accredited learning or something less formal, for example workshops with teachers and school leaders. We need to work towards an environment wherein teachers feel comfortable with the technology because they know that is developed to support teaching and learning, and the technologists feel comfortable with teaching and learning because they know how the technology is able to support it.

Another facet which needs to be changed if practice is to improve is the hijacking of school information systems to fulfill government data requirements. In England the software houses regard the Department for Children, Schools and Families as the driving force for system development. This has led to information system development which facilitates data collection rather than data analysis. The English government has set a target of 2010 for all secondary schools to have an e-learning environment. This is the very environment that Guernsey teachers cited as a requirement if they were to get more from information systems. Broadfield (2009) in the ICT Register Research Report suggests that some schools require learning platforms that integrate with school information systems although problems with interoperability are reported as common. However, as reported in the Guardian (Make the Grades or You're Grounded, July 1<sup>st</sup> 2008) not all teachers are in favour of such a system. This article quotes the National Union of Teachers commenting that "until a proper, independently evaluated pilot happens [it cannot be claimed] that there will be no increase in workload".

Similarly, not all students see the benefits; in fact the student view presented in the same article finds the software system guilty of supporting the very performative culture I have described earlier.



“I don’t even get ‘Hi how was your day’ anymore. I just get ‘look at this test, you failed, you’re grounded”.

If information systems are to support teaching and learning it is teaching and learning that needs to inform the development. A governmental department will certainly have valuable input to system development but the current situation seems to reflect only the government interest and it would be erroneous to assume that is the same as a teacher or student’s interest. The software: can now collect termly pupil census data; provides a repository for a workforce census; and facilitates the collection of Teacher Assessments for national comparison. This development for government requirements has been relentless over the last decade and was a major criticism of the systems by the Guernsey Education Department which did not want much of the functionality provided by a ‘national’ system but found it was not possible to purchase only parts of the system.

Systems need to be developed so that teachers and learners can access them in a variety of ways and for a variety of purposes. The technological learning environment proposed by the DCSF will facilitate this but only if the developers see teachers and learners, as well as the government, as key participants in the project. At the moment, there is a divide between the information systems as used by a school for day to day business purposes, and the information systems being developed to meet the government targets for a learning environment. I would suggest that schools need one system which meets both requirements. Functionality for monitoring, tracking, communicating and informing in one system, which is intuitive for all users and secure enough to meet data protection requirements, yet offers any where any time access. As well as teachers contributing to the design process, we should be encouraging learners to contribute, not just in terms of a ‘snazzy’ graphically designed interface which may be tokenistic, but in terms of the functionality that would help learners make use of information to support their learning. Does it help or hinder them if parents can see their test grades? Should they be able to veto what is made available on-line? How can they respond to the data that is held about them? How can they contribute to

that data? The interviews conducted with students at the research school gave me rich insights into the issues which are important to them, and how creative they can be if asked to contribute. If information system designers could tap into that creativity, the resulting products might be improved and be better utilized by both teachers and learners alike, and what a contribution to learning that would be to have students involved in system design, a contribution to their own learning and the learning of the organizations and individuals that support them.

Finally though, I return to the graphical conceptual framework which placed teaching and learning at the heart of information systems investigation. The Guernsey Education Department encouraged the use of ICT in schools and gave generous amounts of island wealth to support the project both in terms of systems (hardware and software) and in terms of support for schools (people). This project was a response to the changing global circumstances which the island found itself in. Always adaptable, the local community saw ICT as a way of developing skills and securing new modes of employment, in the same way that they had evolved from marine culture, to agriculture, to leisure and tourism to the finance industry. What is of particular note is that information systems are not used in Guernsey to shore up a performative education culture. If we are to improve practice in England, we could learn much from the Guernsey model. Certainly use information to support teaching and learning, but not to pitch school against school. Do not use it to provide published tables of 'results' but use it to provide a way of tracking learning, of tracking individual pupil circumstances to facilitate support of that student in any of the possible ways they may need it, be it due to their special educational need, their struggles with reading or numeracy, their learning of English as an additional language, or to help develop their extraordinary talents. Use the data the systems provided to ensure that students are getting their entitlement to the curriculum and that parents/carers are able to support them because they have appropriate information on which to base conversations. To change conditions where the practice occurs so that information systems contribute to teaching and learning I suggest that the English education model

moves away from a performative culture which uses information to shore up a 'What Works Wins' approach, to a culture which uses information genuinely to support teaching and learning in a non-performative way. It would be incorrect to say that the Guernsey model is faultless, there are many ways that it could be enhanced, not least the abolition of selection. However what I have discovered as I return to work in the English education system is that in the same way that children do not grow taller for being measured, schools do not 'improve' because the government publishes performance tables. There are other ways to support schools in their work of teaching and learning and the Guernsey model has provided me with an interesting contrast.

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**Appendix 1**  
**A Systematic Review of the Literature on the Impact of**  
**Management Information Systems on Learning Outcomes**

## List of Abbreviations

AEI	Australian Education Index
BECTA	British Education Computer Technology Agency
BEI	British Education Index
BIDS	Bath Information Data System
DFES	Department for Education & Skills
EPPI	Evidence for Policy & Practice Information Centre
ERIC	Education Resources Information Centre
ICT	Information Communication Technology
IT	Information Technology
JSTOR	Journal Storage the Scholarly Journal Archive
LEA	Local Education Authority
MIS	Management Information System
NCSL	National College for School Leadership
OECD	Organisation for Economic Cooperation & Development
OFSTED	Office for Standards in Education
SIMS	School Information Management System (trademark)
SIS	School Information System
VLE	Virtual Learning Environment

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## Critical Analytical Study

### Rationale

For this study I have chosen to undertake a systematic review of the literature in the field of computerised management information systems and their contribution to teaching and learning. Hammersley (2001) has challenged the systematic review methodology, suggesting it is positivist, and Pirrie (2001) complains that systematic does not mean bias free. A systematic methodology does not have to result in a positivist review. My own review is not based on Randomised Controlled Trials and does not recommend the creation of an RCT to answer question. Excluding studies on the basis of their appropriateness to question does not render those excluded studies invalid, but merely reminds us of the breadth of research in the field, that has to be evaluated. Hammersley (2001) berates systematic reviews because they favour some types of research over others. I did not judge the included studies on their research design but on their contribution to the knowledge base. He continues that such studies ignore context-sensitive judgments, but I do not agree, this review has helped me to see the importance of context in assessing the validity of claims about what works.

Both Pirrie and Hammersley contest the desirability of assuming that a literature review must be systematic, I agree. However the converse is also true, just because a literature review is required, it does not have to be a narrative review. I chose the method because I wanted to find as much research as possible in what I considered to be an under researched area. will have a bearing on my practice (supporting schools in their use of management information systems).

As some critics berate systematic reviews, so others find fault with narrative reviews. Davies (2003) finds them selective and prone to selection bias. Evans & Benefield (2001) find them less focused and less clear. The OECD (2003)

suggests education researchers have been less successful in synthesizing knowledge in the past, further that the systematic review can include multiple methodologies.

Educational research needs to shy away from polarised, binary analyses, instead focusing on a method that suits question, and then reflecting on that method to stimulate further research. I do not believe the review I present here is exhaustive for it is time limited. I do not consider it to be bias free, but I have not knowingly introduced bias. I agree, “there is no such thing as context free evidence” (Pirrie, 2001, p.130).

I do not agree that a systematic review necessarily narrows enterprise. In the case of educational research I suggest that less (diversity of method) is actually less.

## **Systematic Review**

### **Summary**

### **Background**

Since the 1988 Education Act and subsequent school legislation in the United Kingdom, there has been an emphasis in schools on raising standards of attainment. Following the election of the Labour government in 1997, this has been coupled with a desire to use information and communications technology to improve the skills base of the workforce and make the United Kingdom an e-enabled and e-learning society. Initiatives such as the National Grid for Learning, Computers for Schools and funding for ICT in schools are leading to a change in the way teaching and learning take place and are assessed. Added to this the Local Management of Schools agenda, has led to a wide scale adoption of Management Information Systems by schools.

This review sets out to assess from research and academic literature, the impact of this technology on learners.

### **Aims of the review and review questions**

This review is focused on the area of school information management, specifically management information systems. The aims of the review are:

To identify research on the impact of school management information systems on learning outcomes

To conduct an analysis of the impact of school management information systems on learning outcomes

To make recommendations for future research



This review tries to answer one main question:

What does current research suggest is the impact of management information systems on learning outcomes?

### **Methods**

This review used systematic, replicable methods to identify possible research, studies, reports and journal articles. The methods included searching and analysing; key word indexing of the search results into a database; review and critique of relevant studies and synthesis of the findings of relevant studies.

### **Results**

### **Conclusions**

This review set out to analyse the impact of school management information systems on learning outcomes. From I draw the following conclusions.

The concept of a learning outcome is complex and socially constructed. It may be regarded as a positivist instrument of performativity, or an essential managerial performance indicator or an expression of learner progression.

Not all schools that have information systems use them in a way that could impact learning outcomes. In many cases the school administrator has the expertise not the teachers or school leaders. Furthermore teachers do not have easy access to the systems to enable them to be embedded within teaching and learning. There are gender implications in who uses systems and at what level.

Systems have been developed that are not easy to use, are not intuitive and are subject to frequent change and updating, so it is difficult to gain expertise. These systems are developed in response to government requirements rather than school level requirements. This leads some schools to consider the systems as data sinks for statutory returns rather than tools for teaching and learning.

School leadership is a critical success factor in developing information systems use as a dynamic tool for teaching and learning.

Schools need high quality training and support if they are to maximise their investment in information systems.

In a very small minority of cases, the information system can empower learners and can impact learning outcomes. This is dependent on appropriate timescales for implementation of projects, high quality support and training, embedded use of systems by all school staff with adequate access.

Information technology is only one tool in a toolkit available to teachers. Whilst it has some potential to underpin teaching and learning, school information systems are not being used to do so in most cases.

## **Background**

### **Definitional and conceptual issues**

Many schools in the United Kingdom now use a computerised management information system. Capita Education Systems Co. is the main provider of such systems and has a customer base of over 22,000 schools. Other providers include Research Machines, Phoenix/Pearson, Serco/CMIS and countless small ad-hoc suppliers and school based systems. This development of management systems has been replicated in countries such as Australia (Isdale, 1999), Hong Kong (Fung, 2001), the Netherlands (Ledesma, 2001), Israel (Telem, 1999), USA (Petrides & Guiney, 2002) etc. as schools struggle to meet the demands placed upon them by local and national governments and by parents for information. The UK DfES suggests that a Management Information System is

a valuable tool to help raise standards as well as measure attainment (2002, p. 30)

A management information system provides a computer database that can hold pupil and teacher data, including names and addresses, assessment (national or local), attendance, special needs, curriculum delivery, personnel data and any other information that the user determines. These systems have evolved over the last 20 years from simplistic lists of names and addresses, to complex interactive data and document management systems that can be used on school networks or via the Internet.

The concept of learning outcomes is potentially fraught. Fink (2000) suggests we should not think of learning outcomes but rather of people asked to become involved in new activities. Davies & Ellison (2003) enquire whether ICT application

as an information source produces deep understanding. Visscher (1996) confirms that teachers are dealing in uncertainty, with a multiplicity of factors impacting learning outcomes. There is a danger that the culture of performativity could invade our schools, with efficiency always the bottom line.

It is here where the notion of performativity is central: 'there will be the exteriorisation of knowledge with respect to the 'knower'. (Blackmore, 1997, p6)

I am not proposing an analysis of learning outcomes to inform performance tables or to use as a stick to beat teachers. Like Aves (2000) I consider that the concept of learning outcomes has a promise of progression. Aves requests, that the construction of learning outcomes takes the form of a writerly text, i.e. one where teachers and students contribute to the writing.

I suggest that a learning outcome is defined as the intellectual growth from a point at which the learning began, to the point at which a particular learning course ended. This learning could be based on a curriculum module, progression within a key stage, or a training course. It could equally be based on something less formal; a discussion group of students, student peer review, the potential for learning is not confined to a fixed point on the school timetable. The growth may not always be assessed or examinable, and could cover areas such as a desire to participate, behaviour or motivation, retention as learner as well as actual grade improvements. A desire to continue learning beyond the context of the current learning environment is a learning outcome in this definition. The analogy of the writerly text supports Fielding's (1999) definition of reciprocal learning in a person centred school, and indeed my initial research definition expanded to include teachers and other school based staff as learners too.

**Policy & practice background****Research background**

Issues about management information systems in schools have been the focus of several research studies. Wild (2001) Visscher (1996,1997,2001) Fung (2001) Telem (1996) Pegler (1992) have all been active in the field. However much of has focused on the way management information systems have been implemented in schools.

As the review below testifies, few studies have focused on the effects of these systems on learners. Yet several writers have suggested such research is required. Nolan, Brown & Graves (2001) suggest research is needed on the whether MIS systems add value. Davey, Visscher & Wild (2001) call for more empirical research on school information systems to improve management in education. Hedberg & Bloch (1992) call for investigations into the use of information systems and student outcomes. Telem & Pinto (2004) suggest further qualitative and quantitative research is required to investigate the promise or pitfalls of school information systems. Gipson (2003) believes the impact of ICT on student learning outcomes is an area demanding scrutiny.

These writers are calling for research into educational management information systems, as distinct from Virtual Learning Environments. A management information system may exist separately from a VLE. A VLE will enable student and teacher access to resources held within it, it may be used to facilitate communication between teachers and students and in some cases may receive data from a management information system. However students are not given access rights to a management system currently as the data held therein is confidential and sensitive.

## **Review questions**

## **Methods used in the review**

### **Identifying and describing research**

To assess whether research was relevant to the review, it had to meet certain criteria. Here I will discuss the detail of those criteria, the methods for identifying possible research for inclusion, and how the criteria were applied. The inclusion or exclusion criteria follow.

### **Defining relevant studies: inclusion criteria**

The following inclusion criteria were used for including or excluding research:

#### On topic

- To be included had to report on management information systems used in schools (including post 16 establishments) in the UK or in other countries and the effect of these systems on learner achievements or attitudes or behaviour or retention or attendance.
- Studies had to be written in the English Language, but were not constrained by geographical limits. Schools in many countries are using management information systems; it was useful to compare experiences in different education settings.
- Type of research and design  
Included research was based on primary, empirical research or secondary research (where appropriate synthesis of findings adds to the knowledge base), and contains reference to learner outcomes.
- Date of research

Research had to have been carried out after 1988, the date of the English Education Reform Act. This act substantially altered the way schools stored and manipulated data due to the creation of Local Management of Schools. Studies based on information systems which pre-date 1990 are less likely to be relevant because of the nature of change in information system design and technology.

### **Identifying and describing research**

This review attempted to find as many studies as possible to research the review question. To find these studies I used the following Electronic Databases: British Education Index; Australian Council for Educational Research Index; Australian Education Index; ERIC; BIDS, JSTOR. I used Search Engines on the World Wide Web including Google. I visited websites of organisations such as the DfES, OECD, NCSL, Becta, Kluwer Academic Publishers, Ingenta, the General Teaching Council, EPPI & the Campbell Collaboration. I also used the University of Sussex library to hand search journals and books. I joined the British Educational Leadership, Management and Administration Society and thereby gained access to more journals and index publications.

The search for studies began in January 2005 and was completed in August 2005.

### **Applying inclusion criteria**

The screening of the texts was done in two sweeps. In the first sweep I applied the criteria described in the inclusion criteria above to the full texts of the studies I found. This yielded 48 studies. I then reviewed the studies again and reduced the number to 11 studies that I felt most closely matched the inclusion criteria. Many of the excluded studies provided useful background to the subject area nonetheless.

### **Key wording**

All was key worded, at first this was a fairly ad hoc procedure, based on the findings of studied. However



I was able to hone this down to a specific list, which made key wording the literature a more consistent process. The following key words were applied.

Assessment	Educational Outcomes	Integration Stage	Post 16 education	Socio-Technical approach
Attainment	Educational Policy	Internet Connectivity	Power	Strategic
Attendance	Educational Quality	Joint Action Teams	Primary School	Strategic Analysis
Benchmarking	Educational Technology	Knowledge Management	Profit Yield	Structure
Change management	Ethnicity	Leadership	Programme Evaluation	Student Monitoring
Competence Based Education	Evaluation	Learners	Programme Implementation	Students
Competency	Every Child Matters	Learning organisations	Progress	Systems World
Computer uses in education	Evidence	Learning outcome	Pupil Development	Tacit Knowledge
Context	Expansion Stage	Learning style	Quality	Teacher training
Costs of System	Explicit Knowledge	Life world	Raising levels of performance	Teachers
Creative thinking	Gender	Management	Rational	Teachers workload
Critical Success Factors	Gendered technology	Management of Change	Reaction to Government Policy	Teaching & Learning
critical thinking	Headteachers	Meaning	Reform	Technical Design
Culture	ICT	Methodology	Reporting	Technical Support
Curriculum	ICT Curriculum	Monitoring	Research	Tracking
Data	ICT expenditure	Moral Imperative	Role of Administrator	Training
Data Analysis	Implementation	Motivation	Role of Headteacher	Transactional
Datalogical	Independent Student Learning	NCSL	School	Transformation
Decision making	Informal Information	NPQH	School Based Research	Transformational
Development	Information	Organisational Culture	School Culture	University research
Distance Learning	Information Culture	Organisations	School Effectiveness	User Acceptability Audit
Distributed Leadership	Information Manipulation	Outcomes	School Improvement	Value Added
Education	Information systems	Parents	School management	Value Added transmission of

				information
Education Management	Information Technology	Pedagogy	School Organisation	Values
Educational Change	Infrastructure	Performance	Schools	World Wide Web
Educational Improvement	Innovation	Performance Indicators	Secondary School	
Educational Innovation	Integration	Policy Evaluation	Socioeconomic Influences	

As well as key wording the studies, I included bibliographic reference data in my database. This I had developed in January when I began the research. I then refined it in April after seeing another product that could store bibliographic references. The following data fields were created.

Unique No.	Author	Title	Type of Record	Volume
Issue	Pages	Journal Name	Publisher	Place of Publication
Date	Organisation	Where Found	Website URL	Date found
Keywords	Include?	Conclusions	Limits of Research	Comments

## In-depth Review

### Synthesis of findings

Table Filtering research studies from selection to synthesis.

Total number of studies & references	97
Met inclusion criteria on the basis of	48

title	
Found via hand searches	42
Found via electronic database/www	50
Not received or unavailable – abstract only	5
Provided by University of Sussex	5
Studies not included as they failed inclusion criteria	37
Studies included for review and synthesis	11

## Identifying and Describing Research: Results

### Comparative details of research included in the in-depth review

Finally 11 studies were included in the in-depth review. 9 of the studies took place in secondary schools or post 16 institutions, 2 took place in primary schools. 5 studies were UK based, 2 studies were based in Australia, 2 were based in the Netherlands and 1 was based in Israel, 1 study was international. Despite Hammersley's concerns about systematic reviews being based on quantitative methodological studies, the range of methodologies is more than one-dimensional. Whilst there are 3 quantitative studies, there are also 4 case studies, 1 action research, 2 ethnographical studies, and 1 synthesis of research. The studies appear in books or journals or conference proceedings or on websites.

### Description of research included in the in-depth review

Natrins, Lesley

IT Can make a difference if IT is fit for purpose

This paper was published in London, by the Learning & Skills Council ([www.lsda.org.uk](http://www.lsda.org.uk)). It aims to show how, if at all, the use of technology impacted on learner outcomes. Natrins describes the journeys taken by a number of providers and shares the lessons learnt in a number of case studies where technology has been used as a means of improving learner outcomes. The focus is on raising retention and achievement and learner outcomes.

The methodology consisted of Action research projects (in the post 16 sector). The case studies took place up to 2003, and are arranged under 6 main themes.

Tracking & target setting	2
Value added	2
Learning styles	4
Learning resources	2
Intranet	2
Strategic project	3

15 out of a potential 350 case studies are presented.

Strickley, Alan

Factors affecting the use of MIS as a tool for informing and evaluating teaching and learning in schools

This study was published in the journal 'Education and Information Technologies' by Dutch publisher Kluwer Academic Press ([www.kluwer](http://www.kluwer)). It aims to look at ways management information systems are used in primary schools. The methodology consisted of a quantitative study sent to 50% of primary schools in Birmingham LEA (166 schools).

68 questionnaires were returned. Following the questionnaire semi-structured interviews were held with a cross section of staff in 20 schools, these were broken down into: Head/Deputy Head 18, Office Administrators 9, and Teachers 7.

Visscher, Wild, Smith & Newton

Evaluation of the implementation, use and effects of a computerised management information system in English Secondary Schools

Published by Becta in the 'British Journal of Educational Technology' ([www.becta.org.uk](http://www.becta.org.uk)), the authors of this paper suggest that sophisticated information systems will have to provide school based information relevant to the development of policies in areas where schools used to merely follow government guidelines. As a result knowledge is required on the implementation, use and effects of

established systems. The methodology consisted of a quantitative research questionnaire sent to 3 users per school. These were the Headteacher, SIMS manager, and school administrator. 1000 questionnaires were dispatched to a random selection of secondary schools in the Midlands. Non-respondents were followed up.

Visser & Wild

The potential of information technology in support of teachers and educational managers managing their work environment

Visser & Wild in an earlier study published in the 'Education & Information Technologies Official Journal of the IFIP Technical Committee on Education' ([www.educ.ge.ch/cptic/prospective/projets/ifip/publications/Educ\\_informV2-4.html](http://www.educ.ge.ch/cptic/prospective/projets/ifip/publications/Educ_informV2-4.html)), provide an overview of the range of support that IT can provide in the field of education and how the development of such systems needs to be approached analytically. The study consists of a synthesis of existing research. Includes an analytical framework of variables to be considered when researching how organisations use IT.

Vlug, Karin

Because every pupil counts: the success of the pupil monitoring system in the Netherlands

This paper was published in 'Education & Information Technologies Official Journal of the IFIP Technical Committee on Education' ([www.educ.ge.ch/cptic/prospective/projets/ifip/publications/Educ\\_informV2-4.html](http://www.educ.ge.ch/cptic/prospective/projets/ifip/publications/Educ_informV2-4.html)). It describes the pupil monitoring system in the Netherlands for monitoring pupils' learning progress on a longitudinal basis. Vlug describes the setup of the calibration, the psychometrics used and the educational procedure for structured action. The article explains the possibilities of the software. It offers a description of

the Pupil Monitoring system in the Netherlands and its claims to assess pupils' learning progress on a longitudinal basis.

Doornekamp, Gerard & Drent, Marjolein

A Case Study of ICT & School Improvement at Bassischool 'De Verrekijker'  
Armstenrade, The Netherlands

This is one of a large series of studies conducted around the world as part of the OECD research programme on the use of computers in education.

(OECD, <http://intravdev.oecd/els/ict/nl/nl01.html>). The studies test 5 hypotheses, which are applied to each study. The case study describes 2 innovations related to ICT running simultaneously at a Dutch school. First is the implementation of a student monitoring system for all grades, second is the implementation of designing and publishing web pages by the students of the upper grades. The 5 hypotheses are-

- 1 Technology is a strong catalyst for educational innovation and improvement
- 2 The diffusion followed the traditional diffusion pattern for innovations
- 3 Successful implementation of ICT depends mostly upon staff competence
- 4 Gaps in academic performance between high and low poverty students will not increase
- 5 Successful implementation of ICT will lead to the same or higher academic standards

The methodology used is a case study and a quantitative study completed by 13 teachers in one school.

Wild, Phil & Walker, John

The Commercially Developed SIMS from a Humble Beginning

This study published by Dutch publisher Kluwer Academic Press in 'Information Technology in Educational Management', sought information on users' computing



background, their knowledge, of SIMS, and the level of training and support they received. The study also looked at the system functionality employed in the schools, assessed system usability and looked at the impact of using a management information system on workload. Headteachers were questioned about how they used the system in support of managerial decisions. Respondents were asked in detail for their views on system usability.

The methodology comprised of a quantitative study of 1000 questionnaires sent to 25% of all secondary schools in England with a return rate of 45%.

Telem, Moshe & Pinto, Sherly

Information technology's impact on school - parents and parents-student interrelations: a case study

This paper was published in 'Computers & Education'. It focuses on learning, behaviour and attendance issues in one high school in Israel. The paper deals with parents' individual Learning, Behaviour and Attitude-related relationships with the school concerning their own children.

This research is based on a case study, 17 mainstream families participated in the research. 60 open in-depth interviews were conducted. Non-participant observations were applied in 5 cases. A content analysis was done of relevant documents. The high school uses a management information system intensively and this supports the school's technical core.

Walsh, Ken

ICT's about Learning: School leadership and the effective integration of information and communications technology

Walsh produced this study for the National College for School Leadership in Nottingham ([www.ncsl.org.uk](http://www.ncsl.org.uk)). It provides a discussion about school leadership and

the effective integration of information and communications technology in teaching and learning. Based on interviews with school leaders and systems managers in schools it reviews the progress made to integrate the technology in several pathfinder schools both in the U.K. and abroad.

Isdale, Lindy

'Switch Bitches' and system glitches: How do computers change the work of school 'office girls'?

This research published by the Australian Association for Research in Education and New Zealand Association for Research in Education (Melbourne), aims to offer a new way to comprehend computerised work as a struggle between two types of actor, human and non-human. Isdale suggests it is the school administrators who facilitate the success of the system.

The paper uses Latour's Actor Network Theory to view early implementations of school management systems. A feminist post-structuralist view is then used to look at how the agreements between employees and technologies facilitate gendered forms of work.

Isdale, Lindy

Working with information systems in school administrations

This paper reports on one part of a broader study of the work of School administrators. takes place at the time of the introduction of a School Information Management System. Published by the Educational Research Association Singapore and the Australian Association for Research in Education in Singapore, Isdale looks specifically at new work practices that arise out of working with the School Information Management System, and how these are assimilated into the routines and practices of schools.

The study draws on ethnographic research conducted in 2 demographically distinct public primary schools when a school management information system was first introduced. Over the period of one school term the researcher worked in both school administrations, performing general administrative work and operating the new School Information system.

*For full reference details of these studies confer Appendix 3 of this report.*

## **Findings and implications**

### **Findings of research included in the in-depth review**

Natrins (2004) claims technology has the potential to improve the quality of learning outcomes by offering new ways of working and support systems. She suggests that considerable progress in improving learner outcomes can be made in a “relatively short space of time” if the focus is clear (p37). Natrins advises some important first steps when implementing an information system. These include realistic timescales; recognizing the importance of training and support for users; working with real data rather data devised for training; covering data protection issues; explaining the possible benefits of the system and keeping the project a manageable size.

She suggests that information systems must be a part of a wider pastoral system that provides appropriate support for learners. When such systems identify learning issues learning institutions should take swift action to support the learners. Also, involve learners in planning what will happen. Monitoring of achievement should be connected to feedback to learners.

Natrins believes that providers will be able to relate to and replicate her findings according to their needs and considers the benefit of the action research approach is that providers have focused on outcomes for the learner. She considers her methodology supportive of her findings because action research is as much about the people and the processes as it is about the improvements in learner outcomes. She claims that the essential ways in which people learn are unlikely to change. Therefore existing teaching and learning strategies can best be supported by e-learning, without the need to invent new forms of pedagogy. Technology is only one tool in a diverse toolkit that can impact retention and achievement. Face to face communication with staff is essential, and they need to be involved in decision-making.

Whilst informative her study is not without its limitations. She makes no attempt to define her terminology such as learning outcomes – apart from the loose connection to achievement and retention. program has produced 350 case studies up to 2002. However in this report only 15 studies up to 2003 are presented. With studies ongoing since 1999 only a low percentage are presented. Natrins provides no examples of failure to impact learner outcomes and provides no reference to failure, yet one must question the success rate if only 15 out of 350 studies are reported on. Her suggestion that explaining the potential benefits to staff will assist the process of adoption, infers that there will be benefits, she fails to mention the possibility of negative impacts for staff. If achievement and retention are the only 2 determinants of learner outcomes, is that a sufficiently wide interpretation? As a representative of the Learning and Skills Council is she tasked to produce a positive spin on requisite information about performance and retention?

Strickley (2004) finds that schools are using their management information system for routine administrative functions, rather than realising the potential such systems offer. Headteachers need to feel they are controlling processes. With financial success linked to performance in schools, Headteachers require an overview of school attainment, assessment & attendance. There is a feeling that teachers are not able to use a management information system properly, for example concern was expressed about the possible inaccuracy if teachers were to input assessment marks themselves. Furthermore none of those interviewed saw staff using the system for analysis and the development of teaching strategies. By contrast office administrators are the main user and experts of the system and are powerful in relation to the system, a view contested by Isdale.

Administrators make the software work because they have to in order to do their jobs, whereas senior managers find the system archaic and unfriendly. If the system is not used frequently it is considered difficult. Because the system has to

be used on the school network, rather than at a more convenient location, staff are reluctant to use it. This has meant the diverse functionality offered by the modules has not been exploited. Indeed senior managers are happy to use Word or Excel but loathe using the SIMS modules.

Strickley found that none of the schools are using the management information system as an organic ongoing alerts system. This means the system becomes a data repository rather than an informing tool. He also suggests that school size is an issue. A management information system is less useful in a close-knit environment where everyone to some extent knows what is going on in everyone else's classroom. He asserts that a school wide approach to data entry would not increase the school workload and indeed would decrease it for some. The advantages to teachers of using a system must also be stressed.

Whole school networks are a pre-requisite for effective use of a system. He believes that this will enable teaching and learning systems to inform the management information system in an automated way, and vice versa.

Strickley finds that in order for a management information system to be useful it must be rich in the information it produces but that this will require a different perspective from the schools. The Common Transfer File, which holds key pupil data and is transferred electronically via a secure DfES website, will play an essential part of the system and may help to move schools towards using their systems more effectively.

Strickley identifies five areas which he suggests need to be reviewed. These are accessibility, ownership, training, trust and usability. He believes access and usability are simpler to implement than ownership, training and trust, which require a change management culture.

He reports that his interviews did not cover a large number of classroom staff but fails to give an accurate indication of how many. Had he been able to conduct his research with more teachers he may have been able to probe more deeply his hypothesis that schools are not using the management information system for monitoring and feedback. He suggests that administrators may see teaching staff's lack of ICT expertise as a means to improve status and feel they have the upper hand in terms of ICT competency but he provides no evidence for this supposition.

He perceives that in a small school, the type of information held on a computer system is already known by the staff body. However this is not a given, teachers often work independently and are not always able or willing to share data, Hargreaves (1992) refers to a pervasive culture of individualism within schools. Strickley focuses his attention on the performance issues of information, the requirements of statutory returns, the management of budgets. He makes reference to the potential for teachers to access information on assessment, attendance etc. and for parents and governors to access different strands of information. Yet he fails to explain how the system might impact pupil learning. This is ironic given the reference to informing the teaching and learning process in the abstract.

Continuing on from their earlier 1997 study, Visscher, Wild, Smith & Newton (2003) believe that it is national government requirements that have affected how management systems have developed in schools. There is now an emphasis on school management processes and information needs rather than just administrative tools for the storage and reproduction of data. In the early days of the roll out and uptake of SIMS into schools, the development could be viewed as uneven.

There are three factors that influence the outcomes of educational and other innovation processes. These are the features of innovation contents, which they

regard as the software. The features of the innovating unit, which in this reading is the school, and the innovation strategy used.

The authors found that the SIMS manager and school clerical staff use SIMS directly far more than the senior managers of the school. Many modules are infrequently used, if used at all. Only 21% of the schools surveyed used the Attendance module each day. SIMS is very underused by managers. Only 13% of those surveyed perceive SIMS as working.

Ironically 66% were positive about the way SIMS supports management.

Training investment for school managers in SIMS is insufficient, and Managers are critical about the quality and quantity of SIMS training they had received. Training is practical (i.e. Button pushing) not theoretical (i.e. Why would schools want to do this). Schools in the survey found it hard to get support when using the system.

The culture of a school can influence the success of implementing a management information system. Also the writers claim that the extent of external training is the most powerful explanation of differences in SIMS use between schools. It was felt that SIMS impacted positively on aspects of user jobs, for example a very positive effect was perceived on the monotony of work, time needed, ease of duties and general help offered.

To date the writers do not believe that the system has been fully implemented. They suggest some important success factors for implementation. These include; the motivation of staff; possessing general computer knowledge; making sure adequate and appropriate quality of training is offered and the information provided by the system needs to be of a high quality.



The writers suggest that the importance of the extent and quality of user training has not been realised, even though the same issues of training have occurred when introducing IT systems in industry or business. As a general rule the quality of user training should be improved and should be matched to the needs of target user groups. It may be necessary to find different training strategies and research their effectiveness thoroughly.

The writers refer to one typical Midlands local education authority as representative of a funding mechanism for the purchase of the management system. I do not agree that one LEA can be perceived as typical of any other. Professionally I have worked in 5 different education authorities in a variety of roles. This has given me a broad experience of education authorities. In fact in the years since the 1988 Education Act there have been many re-organisations of Local Government and in my experience, each new version of an LEA has sought to distance itself from anything that went before. Each LEA sought to implement the local management of schools in its own way, and it was national government dissatisfaction with the varied amounts of delegated budgets, which led to the subsequent Fair Funding legislation. The writers claim that the system has a positive effect on reducing workload, yet only 30% of respondents indicated this. The figures provided for the discussion of the effects of SIMS use need further explanation. For example if all the respondents were asked about information for curriculum planning, not all would be qualified to answer the question – administrators would not be involved in curriculum planning. Although the paper remarks that 2 different questionnaires were sent to each school the figures presented do not inform fully as to what each percentage is referring to, number of respondents, number of appropriate respondents etc.

The writers conclude that full implementation has not yet been achieved. They do not explain what they mean by the term full implementation. It is not likely to be accomplished because each school will have different perspectives on what that

means. The full use of the varied modules is not obligatory, not all schools will be collecting the same information. This will be dependent on national government data objectives – for example Wales decided to abandon Key Stage 1 Test information before England did the same some years later. In Guernsey schools are not allowed to collect ethnicity information whereas in England this is mandatory. Some schools will regard statistical analysis of performance data as essential and some will be un-interested in this tool.

The model of variables and relationships between variable groups, lists under intended/unintended effects teaching quality hence the inclusion in this review. However there is no mention of student learning in the research. The learning that takes place is as a result of the training offered to users, this is perceived to be inadequate.

In their earlier study, Visscher & Wild (1997) consider that IT can help users to transfer information, to redraft and transform it. The use of IT may provide feedback, support and privacy. However the resulting changes will put pressure on the management role of teachers, and the management of organisations. They continue that IT tools will underpin the new information needs of teachers and administrators, and offer management support as well as their role as a learning tool.

They perceive the impact of any system to be a complex mixture of variables such as the system quality, the implementation process, or the features of the educational organisations in other words context is important here. Management information systems don't affect a teacher's classroom autonomy in how to teach. The information provided by systems allows flexibility in how the information is used. However teachers may find the working practices ordered by the information needs of the system are foreign and this can reduce transportability between users.

The writers are cautious in analysing the possible impact of systems on learning. They believe that measuring learning gains is difficult due to the diverse variables that need to be considered, these may be far less determinate than many outcomes from information systems.

To date they believe that the use of systems is limited. Sophisticated management requires:

The capability to decide what information is needed

Technical information retrieval ability

Data interpretation ability

Evaluation of effects of system usage on the institution

They regard international usage of systems as being at the first stage, because there aren't enough users capable of using the systems at a sophisticated level. However they have found evidence that use of management information systems can lead to efficiency and effectiveness in schools.

The writers believe that as systems merge it becomes obvious that the end result should be enhanced learning environments through better pedagogical practice in the classroom and better learning by pupils/students. If this does not occur the investment in time and money will be queried. The authors quote research by Johnson, which suggests a link between learning outcomes and teaching styles and pedagogical practice and links with IT (Johnson, 1993 cited Visscher & Wild, 1997).

Management information systems may influence the information infrastructure. This will in due course affect staff roles and responses in the classroom because of an improved information infrastructure. Teachers can then make better-informed decisions about individual pupil support. This move from the administration office to the classroom may depend on the prevalent curriculum and change ethos of the

school. This culture will need to be reviewed as part of the design process. The system may influence pedagogy. For example better information and teachers use of the system *should* give time for pupil contact. This *should* enhance interaction, positive intervention and communication, with implications for a more collaborative learning environment. If a system monitors pupils' progress teachers can manage learning in a more individualized way, this could impact on motivation and the level of learning, through better feedback structures.

The suggested obvious end results will not be obvious to all and will be contested by some teachers who have taught using more traditional methods. The new environment will alter the power relationships between pupil and teacher, which will not be an obvious end result for teachers.

They assert that management systems will provide more time for feedback and discussion and will lead to a more collaborative environment. This claim would have to be analysed and included within the analysis should be the learning time for teachers, which is often excluded from the analysis. The paper makes many claims for the efficacy of information systems but does not provide any concrete examples of this.

Vlug (2003) describes a pupil monitoring system devised in the Netherlands. Although largely funded by the Dutch government, the National Institute for Educational Measurement Tests are not mandatory, yet are purchased by 80% of Dutch schools. Vlug suggests that monitoring pupil attainment is an essential part of teaching. However students are not always assessed in the same way, teachers have different systems of assessment.

The testing system she describes as a

Concrete means for identifying discrepancies between progress and the targets and sub-targets set by the school and for registering this progress (Vlug, 2003, p.288).

Devised by primary school teachers and subsequently tested for psychometric quality, the system enables the recording of different results over time. These can be used to produce either an individual record or a group record. Teachers are thus able to see quickly if the pupil has failed to make progress.

Although many schools have purchased the tests, this is not a guarantee that they are all being used. Some schools don't use the system in the way that developers intended it to be used. Vlug emphasizes that teachers need support, training and resources to get the most from the system.

From the data produced by the system, the teaching staff can investigate which pupils are not making progress and then discuss this and devise strategies to manage it. The system uses software for many tasks, but using a computer is not obligatory, the system can be run as a manual system. The test results are standardised, which teachers find useful

Vlug quotes a study which suggests there have been no side effects of the system were found, except that teachers have to spend time getting to grips with the system. The computer program does help the teachers to get more information out, but they do have to put the time in to do this.

Processing the data on a computer could impact on their work as teachers. They would have to learn how to use the system, and inevitably this will generate different work for them.

Vlug's positivist approach may be considered inappropriate by some observers like the Assessment for Learning Group. She says that only general information on

possible gaps in pupil knowledge can be extracted from the system. An inference that much goes into the system but not all can be retrieved from it, which appears to be a qualifier of the usefulness of the system. Reporting on the transparency of the report suggests homogeneity of the data. However the data about the pupil's learning is not transparent and unambiguous if it is devoid of context, e.g. which class, which teacher, what was happening at home, with friendships etc.

She suggests that teachers can analyse the mistakes that pupils make, but provides no evidence provided that teachers do actually do this analysis. Ironically Vlug says no negative effect was found in a study of the system, but she then begins to discuss teaching to test, and tension between the classroom activities and the test content. She proceeds to indict the USA where a test regime has led to teachers teaching to test. Vlug says that Dutch teachers tend to adjust the tests rather than teach to them.

As an employee of CITO (National Institute for Educational Measurement) Pupil Monitoring System Dept. Vlug is keen to promote the system. Many of her references are from colleagues who are also promoting or developing the system. 80% of Dutch schools have allegedly purchased the system but is that an indicator of the possibility of enhanced learning outcomes, or simply good salesmanship?

Doornekamp & Drent (2001) studied ICT & School improvement in a Dutch school as a part of a wider OECD study. They refer to teachers' use of ICT for entering remarks and other information in the student monitoring system. Teachers interrogate the system and set up activity plans for students who need extra consideration. Teachers can access information provided by colleagues. If a teacher has observed a problem in his class, he can verify whether a colleague has also similar difficulties and what was done to resolve them.

The researchers found that management of the ICT-infrastructure was problematic. If ICT is to be integrated into education, they suggest that resources have to be

made available for school managers. The school leaders suggested that if these resources were not made available then integration would fail.

The researchers report that the school leader creates the conditions for staff development. Where a culture of trust exists teachers will feel more comfortable in taking risks. The school leader has delegated tasks to his staff. The staff have become dependent on ICT using it daily for entering data into the student monitoring system, or extracting information from it. The pupil monitoring system is based on technology.

The Headteacher notes that staff are worried about what will happen when he leaves the school. Will the forthcoming new Headteacher have the same commitment to ICT? The school suggested that the ICT systems were aimed at improving the quality of education. In this case the school wanted to realize independent and collaborative learning.

This paper alludes to teacher use of a monitoring system but offers little information on the quality of use, the analysis provided by the system or the use the data is put to. The questions in the survey are very general and do not specifically ask about the monitoring system.

The hypothesis about academic standards fails to refer to the monitoring system, and a suggestion is made about possible future evidence. The only evidence apparently confirming the hypothesis concerns student use of the World Wide Web. The study is very small and the questionnaire rather general.

Wild & Walker (2001) relate how government funding after the 1988 Education act persuaded many Local Education Authorities to implement new IT systems at a rapid pace from 1989.

SIMS soon achieved a dominant position and by the year 2000 the main competitor (Research Machines Ltd. Key Solutions) had only 20% of the market. This dominance was secured as the number of players in the School Information System market reduced due to mergers and acquisitions.

Initial development was patchy due to a lack of software design knowledge by the developers. Such a trial and error design process is probably not going to produce an effective system, acceptable to teachers and efficiently implemented.

The writers suggest that the implementation policies ignored the unique school environment, that operators lacked experience and needed a lot of training. Critically LEAs that began the earliest implementations regarded the initiative as being student-based, however those coming later perceived the implementation as predominantly finance systems based.

As government requirements for more information from schools has grown the systems development reacted to the demands. These requirements pushed the development beyond a system of administrative tools for the storage & reproduction of information. There is presently little consensus on the most effective ways of monitoring and reporting on school and teacher performance. This reaction to government requirements constrains the future vision of the system.

Wild & Walker comment that a typical LEA responded to the implementation of the system by undertaking a planning process. They argue that the leading support teams included a significant number of teachers. Their survey found that some users felt the system contained more data than was necessary. However subsequently teachers have been required to show the impact of teaching on pupil achievement. This relies on more data being available, so it is possible that such a view has now changed. Training and support for the system were considered contentious areas, with only 44% of respondents happy with the quantity of



external training. Access to support in case of problems is important yet only 37% found it easy to get help outside the school.

Workload was reported as reduced but this workload was spread among many staff, including those whose job was specifically designated as being responsible for the automated administration of the school. Stress levels have allegedly reduced.

The researchers believe that SIMS has made it possible for schools to adopt the management roles previously held by the LEA. Simultaneously schools have been made more responsible for academic and financial management. They suggest that the main outcome of using SIMS has been to provide access to information that was previously not available.

As schools become more adept at using information from SIMS they are starting to demand more from it. The information is now useful and accessible to teachers.

The authors claim to have a wide experience of the development with School Information Systems, having been involved in early developments in their own schools and then as a University researcher and support centre manager for SIMS implementation. Does this actually constitute a wide experience? They don't say how many different types of systems, how many different LEAs, how many schools, and fail to provide information to substantiate this.

There is no such thing as the typical LEA to which they refer, and even less so at the time SIMS was being implemented in the early 1990s as local authorities were subject to local government re-organisation. If the writer is referring to the one LEA he worked for, how can this be representative of others? How does an urban authority represent a shire county or a unitary authority? Each will have very different views on the funding mechanisms provided to schools and the emphasis for systems adoption.

The writers suggest that the most successful support, training and implementation teams initially included a significant number of teachers. However they fail to provide evidence to back this claim up.

The study alludes to the need for more information about pupil outcomes but bases this on a need for performance review of teachers rather than any debate about pupil learning. This makes the study less useful in this review exercise.

Telem & Pinto (2004) discuss the implementation of a management information system in a school in Israel and the effect this system has on Learning, Behaviour and Attendance. They report a change in relationships between parents and the school as a result of the system. The automation of communication when issues arise has moved relationships from being summative to formative in nature.

Their findings suggest that parents did not receive sufficient information on pupil school matters in the era before the information system was implemented. Since the system arrived however school staff and parents receive a wide variety of reports in various formats. Parents found these reports current, easier to read and more reliable. Most parents preferred the quality of the new reports and considered the school more progressive and sophisticated than previously.

The researchers discovered that the system facilitated change in the relationships between parents and the school staff. Because the information was accurate and current, parents found less to disagree with, the principal of the school made more efficient decisions with the accurate data to hand and followed these decisions up. Pupil achievement could be compared to others in the cohort; class achievements could also be compared. The principal had more information with which to judge parent complaints about the school.

Tutors reported an increased sense of responsibility for their students. Parents were happier with this view and they regarded the tutors more positively, seeing them as better organised and more interested in their children. However for parents who did not have children with behaviour or other problems, the relationships with teachers became even looser.

Teachers suggested that they gave more consideration to their assessments as a result of the system. This impacted on meetings with students and parents, which were less confrontational. Some teachers said the system helped them to inform parents on the relative achievement of pupils.

Parents used the information provided to challenge teacher effectiveness. In one case a teacher was dismissed, whilst teachers did not like this aspect of the system, parents were empowered and felt they had a legitimate case to be answered.

The reports provided on learning, behaviour and attendance gave teachers more information with which to engage parents. The evidential nature of the data deterred parents from arguing about their children's behaviour.

The researchers found that relationships between parents and their children changed from one characterized by argument to one characterized by a shared perception, looking for solutions and improvement. Even those families who felt alienated and remote as a result of the system considered that relationships between them and their offspring had become closer. They reported more co-operation and stronger attachment.

Better information about their children's school experience drew the families closer to the school. Tensions between all parties reduced, communication became more effective and barriers between home and school broke down.

Telem and Pinto provide an extremely positive image of the effect a management information system can have on learning. However the study is based on only one school so cannot be representative. Similarly the study is based on one school year only so would need to be spread over a longer time to confirm the long term efficacy of the findings.

alludes to the fact that further research is required to confirm the promise and pitfalls of school management information systems. By focusing research on grades, behaviour and attendance the researchers reduce the concept of learning to quantifiable concepts. The suggestion is that grades are the focus of learning, which infers a performance emphasis, rather than a broader view of learning.

Walsh (2002) relates the vast sums spent on ICT but he questions the use of ICT by students and describes a lack of progress towards integrating ICT into subject teaching. Such integration requires a paradigm shift, so that new comprehensions can create new perspectives and interpretations.

He claims that school leaders should be aware of the effect of integration of ICT and particularly how this will alter the relationships between teachers and pupils. The technology changes all school members into learners, the power relationships change, and in fact even the school institution becomes a learner.

Daily management of the school is dependent upon ICT and staff have laptops that have to be used for class registration, student assessment & reporting. However Walsh considers that most schools are still at the state of acquisition of kit and infrastructure, rather than pedagogy.

Walsh considers the commitment by school leaders as essential in facilitating the integration of ICT into school life. Headteachers have had to learn to master information systems to access student, staff and financial data. However this mastery has made their jobs easier and has imposed change on the work of the

school administrative staff. School leaders have to communicate the vision, facilitate the development of skills and involve the whole school community in this new way of managing information. One issue of note is the importance of leadership from a wide variety of staff who may not be teachers in the traditional sense, but have come through the school system in other ways, e.g. ICT professionals.

The schools that Walsh researched had changed their management structures and teams, involving a broader group of staff in the change process. Management structures were wider and flatter than conventional hierarchies and leaders had been identified outside the line-management model. A new brand of leader, instructional and transformational, committed to learning, and able to work with colleagues across the curriculum to embed ICT into the learning process, has emerged. Leaders at all levels and can be both teaching and non-teaching staff. The Headteacher can encourage this web of leadership to develop. Cross-curricular teams can develop but structures need to be flexible.

Adults other than teachers play an increasingly important role in schools around the world. Technical support teams and systems' managers are developing the learning infrastructures of schools. They relate directly to the teachers and non-teacher resource assistants in the schools' creative processes.

This is a very different role to that played by 'managed services' from hardware suppliers (Walsh, 2002, p.11).

This research suggests that information systems are crucial to the effective functioning of the school. Most schools in the study had developed complex uses of ICT and used students' assessment and information retrieval systems as well as electronic registration.

However not all schools were happy with the systems. Some complained that the systems were unable to provide the required solutions. Some found data had to be entered repeatedly. Schools bemoaned the commitment to a particular system.

Walsh advises that schools need to be clear about how ICT should be managed. Decisions about information systems are crucial and should be based on the expert advice of someone who knows the schools' needs.

Pathfinder schools are using flexible management structures to enable the creation of learning environments. In these the agenda passes from the teacher to put the student in control of learning.

Walsh suggests that information systems are crucial to effective schools but fails to link administration systems to learning. He provides little data on how systems are impacting on either student or teacher learning.

As a research associate of the National College of School Leadership he is looking for case studies which show successful cases (particularly in the light of the School Leadership ICT program) but does not appear to have chosen to view schools that do not have ICT successfully embedded (this may be the majority) and to analyse why they are not at the same cutting edge he refers to. He refers to all the evidence to date p.24, but does not tell us what evidence he has reviewed.

Isdale (1996) presents the only feminist research I was able to find on this subject. She presents the story of Julie, a school administrator trying to come to terms with a new information system. Julie encounters difficulties because the information has been hard coded, but the school is dealing with soft information, actual pupils with all their ethnic diversities. The school administrators took responsibility for making the systems work, learn the language of the technology and learn how the technology related to their school knowledge. They also had to foster new

relationships with technology providers, government departments etc. This was all new work but had to be accomplished alongside existing workload.

Drawing on Latour's Actor Network Theory Isdale suggests it is the administrators who managed the implementation of the system, ironically the workers with the lowest status in the organisation. She suggests that without their work, the implementation would have failed. She regards management information systems as gendered technology, suited to administrative work, which was overwhelmingly done by women. The technology does not have the power to transform school information work by itself. It is dependent upon the workers actually making the system function. Isdale believes that the workers and the management systems construct the work together, each dependent on the other.

The Actor Network Theory recognizes this interaction between the workers and the system. By enrolling actors into a relationship the innovation (the management information system) becomes concrete and long lasting. The school is socio-technical, the system needs the workers to make it work and the workers need the system to make them knowledge workers. Such a view rejects the subject/object-polarised debate. Actors can take on different roles in different contexts; relationships can be complex, dependent upon the other actors involved.

Management information systems control work by providing mandatory information points, these compel workers to using the system appropriately. Women workers using the system will have images of themselves as female, which have an effect on how they use the system. How they translate the management information system will be dependent upon the connections they make with other female workers in similar low status jobs. The system is the responsibility of the administrators because they have the lowest status in the organisation and are not able to reject the information system agenda. Isdale believes that the Actor Network Theory together with a post-structuralist feminist lens illuminate the mechanism of power through the bodies of actors.

Management information systems cannot work if the administrators are not mature and responsible with an awareness of the importance of their own part in the data manufacture process. These systems are dependent upon the institutionalization of women's work.

Isdale presents a complex theory about the relationship between technologies and workers. is based on a study of only 2 schools this limits its wider applicability, do school administrators like Julie exist all over Queensland? She suggests that if management information systems were the preserve of the school principals, they would have been rejected immediately because they do not fit existing practices and are too time consuming. She provides no evidence to back this claim; did she question the principals on this issue? In other studies it is in fact the Headteacher that has made the system work and in many cases the Headteacher is a male body not a female body. Isdale ignores the context of why women may choose to work in school offices, there is much she could have said about the female role of carers, working to fit in family commitments, and how this technology has turned what was an unsophisticated administration role into a complex knowledge workers role and what effect that has had on workload and work aspirations of the women she describes. The learning that takes place is by the administrators, but she refers to their role in convincing teachers of the necessity of this information. Again she makes claims about what would have happened if the principal had been persuading the staff but this is supposition on her part. She does not link the data entry to any system outputs, but instead focuses on work procedures, which she describes as fiddly and tedious. She regards management information systems as having a negative impact on learners (in this case School administrators)

In a second study Isdale (1996) describes more school administrators having difficulties managing the information system. She suggests that such difficulties will always occur because the systems are always being changed. Such systems are complex and those who have to make them work will always need to keep their



skills updated. Using a networked, integrated information system, means that workers will always need to take time to maintain the system and solve problems presented by the system, such as security issues. This will inevitably mean that two systems are required, a manual and a computerised system.

Isdale suggests that these systems are not delivering the efficiency and productivity that government departments may have expected. School administrators devise their own strategies for making the system work regardless of government policy. Isdale suggests that existing practices were superior to the information system as exemplified when an emergency situation arose in the school. It is when the system is tested that weaknesses are revealed. Isdale suggests that Foucault would ascribe these situations as moments when social consciousness can be criticized and the limitations of totalitarian theories can be seen.

Strategic management of information is now as central to the core business of schools as are teaching and learning. This has underpinned the growth of new administrative practices in schools and across the education departments. Isdale suggests that the modern concentration on improvement and efficiency has technologised lives, which perpetuates the concentration on improvement and efficiency. This cyclical logic persuades workers to stay contained within the parameters of what seems to be normal social structures and systems of organisation, when in fact everyday lived evidence may provide a contrary view of normality.

Schools should not accept the perceived government wisdom, but should question it. No matter how much administrators work at the new system, A manual system will continue to be needed in case of either system failure or in the event that information is required in an emergency, but that school staff cannot access the system.

Isdale suggests that the system is not a secure one, because human intervention overrides the system security. She regards it as ironic that the administrators pool their knowledge and expertise to make the system work. They work collaboratively in this endeavour, rather than alone as the system intended. Information systems dissipate the knowledge held by administrators; the systems keep school management separate from teaching and learning.

When systems are initially introduced into schools, administrators find their own way to undermine them and construct practices of their own instead. This suggests that workers can see their own work history, learn from their knowledge and devise autonomous actions. In the stories presented, Isdale considers that workers will see through the perceived wisdom that information systems are robust, efficient and faster, because their own experience will inform them that they must compensate for the idiosyncrasies of the systems. Such systems will not be 'one thing' but many. There will not be one type of knowledge about information systems but several different types of knowledge.

Isdale considers that more attention must be paid to the actual experience of workers using such systems so that perceived wisdoms can be challenged. She refers to a Foucaultian genealogy: a history of now rather than a history of then.

Isdale suggests that information systems are not as efficient as paper systems, however any system either paper based or technology based is subject to human intervention. Paper systems can have incorrect information in them regardless of speed of access. It is simplistic to assume that all administrative systems in schools before computerization held accurate information and suggests a lack of experience in the school environment to me.

She continues that a computerised networked system is not secure, however the fact that a system is not computerised does not make it secure by default. Any system whether paper or electronic or based on human communication can be

deemed insecure. For example papers can be left on desks in view of many people, even when marked confidential. People gossip regardless of whomever is within earshot. The aim of the password system is to refuse access to the data by anyone without access rights. The aim is not to construct a hierarchy amongst workers but to protect individuals' information. However if everyone knows everyone else's password the system will be insecure.

Marlene was anxious because she had relied on her existing knowledge to solve the emergency problem, rather than using the new system. It suggests that she had not received sufficient training to secure her knowledge of the new system, or that the learning required had not been bedded down. This is inevitable when any new system is embedded within any organisation. The researcher's study took place over only one school semester; it would be useful to see a more longitudinal study to see if the same reliance on existing practices continued. Over such a short time-span it would be unlikely that possible benefits from the implementation of an information system would have accrued.

### Synthesis of findings from research in the in-depth review

#### Summary of findings in included studies

Natrins (2004)	Technology is simply a means to an end, one of several tools that can impact student achievement and retention. Implementation needs careful planning; training and support are essential for staff, the benefits of systems need to be explained to staff. The purpose of the system is for learners, not for technology. Face-to face communication is needed for change management. Senior management team involvement and support is needed if the system is to be successfully adopted. Learners need to be involved. Monitoring of student achievement must be linked to feedback and support.
Strickley (2004)	Management information systems are not being used to their full potential by schools. Academic and curriculum networks should be integrated. The role of the Headteacher is crucial in opening up the system to other school staff. The administrator is the school expert on the system. Access to the system needs to be increased, and the whole school needs to own the system. Training needs to be ongoing not just in how to use the system but how to use the information to impact on

	teaching and learning. Schools need to be able to trust the system. The system needs to be easy to use.
Visscher, Wild, Smith & Newton (2003)	Full implementation of systems has not yet been achieved. Schools are not benefiting from the system. The system is used for administration but not fully for management. The system can reduce monotony of work. Some users consider the system helpful for school self-evaluation, less than 50% considered it provided assistance with curriculum planning. Training and support are essential for full exploitation of the system.
Visscher & Wild (1997)	IT tools need to support the information requirements of teachers. The context of an information system is decisive in how the system will be adopted. Measuring learning gains is difficult because of the different variables present in a learning situation, pupils, teachers, curriculum etc. these are less determinate than an information system. There are a lack of support staff able to fully exploit the system. Schools that can use the system are more effective; the system can facilitate policy development and evaluation. As systems mature learning environments will be enhanced leading to improved pedagogical practice and better learning. Training is important in widening the use of the system. Acceptance of the system depends upon the school culture.

Vlug (2003)	Monitoring is essential to good teaching, however pupils are not always assessed using the same methods. Pupil progress needs to be monitored over time. Teachers need training and support to fully exploit the system. Even if the system has been Implemented, it may not be being fully used. Teachers can use the information produced by the system to identify pupils needing more support. Software is not a magic tool, but can help to provide teachers with more information. Entering data into the system has a time cost.
Doornekamp & Drent (2001)	Teachers enter assessments and other data into the student monitoring system. They interrogate the system and set up plans for students needing extra help. Teachers can access the information provided by other colleagues. The Headteacher creates the conditions for staff development and has delegated to staff. The school is dependent upon the system, it is used daily for pupil monitoring. The school is a beacon school.
Wild & Walker (2001)	SIMS was designed to mimic the school administration system. National requirements for pupil monitoring have led SIMS to engage in reactive software development. Early software versions and training forced a straightjacket onto school administrators, which led to duplicate systems. Administrative staff used the system more frequently than

	<p>teachers. Training and access to the system are important; more training is needed on how information systems support education. Teachers are beginning to demand more from the system.</p>
Telem & Pinto (2004)	<p>The successful implementation of a management information system had an impact on the Learning, Behaviour and Attendance of pupils and on the relationships between the school and families. The quality of the system outputs influenced parents' attitudes about the school. The Headteacher was instrumental in bringing about the change in the system. The information impacted relationships between parents and school staff and parents and their children. The information empowered parents. This sometimes made school staff uncomfortable, worried about their professional status.</p>
Walsh (2002)	<p>The impact of integrating ICT into schools should not be under estimated, relationships between teacher and learner will change as a result of this integration. Leadership from Headteachers and other staff is important for communicating the vision. Leaders may come from non-traditional management models. Integrating ICT means sharing and learning from each other, creating cross-curricular teams and making use of best practice. Schools have complex uses of ICT for school administration. Decisions on administration</p>

	systems are critical and schools need advice from experts in this area. Beacon schools are creating learning environments where students control their own learning. In such schools it is learning which is important, not the technology.
Isdale (1996)	As a result of the introduction of management information systems in schools, the role of the school administrator has changed. The administrators and the system combine to construct the work. Yet the success of the system depends on the skills of the employees with the lowest status. These workers have the least ability to resist the implementation of these systems onto their workload. School information management systems reinforce the notion of unrecognized 'women's work'.
Isdale (1996)	Due to technological advances, management information systems will always need updating; therefore problems will always continue to arise with the systems. At the early stage of implementation the systems do not provide the promised efficiency and effectiveness for schools. Information management is now as central to the work of schools as is teaching and learning. When day-to-day practice is interrupted e.g. as a result of an emergency the systems are not as efficient as local knowledge. School office workers make the system work, often by



	<p>pooling their knowledge. The systems fragment the knowledge that workers have about the school. This fragmentation creates a divide between management of schools and teaching and learning. There are multiple interpretations of the veracity of claims about efficiency and effectiveness being delivered by these systems. It is important to be aware of these multiple interpretations rather than to believe all the claims made on behalf of management information systems.</p>
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**Synthesised findings of this review**

The following issues have emerged from this review: -

Schools

- Achievement needs to be linked to feedback
- Administrators are often the experts
- School culture and context are significant
- Schools are not benefiting from the system
- The concept of learning outcomes is fraught and complex
- The whole school needs to own the system
- Where systems are successful teachers are using them frequently and parents perceive the system outputs as high quality

Technology

- Data needs to be trustworthy
- National government requirements force reactive system development
- Not all the system capacity is being used
- Systems need to be easy to use
- The benefits of systems need to be interpreted
- There are not enough experts in management information systems

- Whole school networks are needed

### Organisations

- Change Management
- Information can empower
- Leadership is crucial
- Training and support are crucial with a focus on education issues
- Using a system has a time cost versus benefit

I will now discuss each of these issues.

## **Schools**

### **Achievement needs to be linked to feedback**

The National Teacher Research Panel considers that data can be effective in supporting teaching practice, but it has to be used creatively and critically. Green (2000) suggests that data should be made available to students as fully and as quickly as possible. He also considers that the use of value added data is a great motivator and that students should be engaged with this data as soon as possible.

Ofsted (2003) reports that learners value feedback and discussion about their progress, and parents' value well written reports and regular consultation. They link good management of assessment to the use of information systems and administrative support so that the burden on teachers can be reduced. Analysis of learner outcomes is not a finite but ongoing process.

*(Good quality)* Management Information Systems have the facility to assist teachers in feeding back to learners. This feedback could be in the form of a written report or a numerical/grade report. However what often happens in schools in my experience is that a report is produced at the end of a learning process (e.g. an End of Year Report). Such feedback is unlikely to impact the learner because it is summative, relaying only what has happened, not what could happen (given certain circumstances). For feedback to be effective it needs to be more regular than a one off review of historical performance.

Administrators are often the experts

Can schools gain the most from an information system if the administrators are the experts? A study of school leadership in England found less than 70% of Headteachers, less than 60% of Deputies and less than 40% of Middle Managers use management information systems (MORI accessed 2005). The same research suggests that 93% of Headteachers use email so these school leaders are not technophobes but do not appear to value the management information system. If over 90% of school Middle Managers access websites, why is their use of management information so low? 40% of Headteachers do not use internal management data which begs the question what do they base their decision making on?

There is both a gender split and a school sector split, with more male managers using an information system and more secondary school managers using an information system. There is also a link between studying for the National Professional Qualification for Headteachers and the use of a management information system. The inference is that such systems are about continuing professional development, not about pupils. If school managers are not finding the systems useful, it is unlikely they will encourage teachers to use them. Other research provides a different perspective, the ICT in Schools Survey 2004 claims that over 90% of school leaders use ICT for management and administration, but only 50-60% of teachers use it in this way.

Nolan et al. (2001) see this location of information systems expertise in the administrator as being due to one of three possible causes. A desire for control and power on the part of the administrator, a misunderstanding of the use teachers could make of the systems for teaching and learning or the difficulties of providing access given the existing design of network systems. The concept of power retention in schools, echoed by Strickley, is at odds with Isdale's reading of the

administrators as those with the least power. This subject could form the basis of a separate analytical study by itself.

### **School culture and context are significant**

Context is probably more important than either the background or the people involved in a situation, by changing context more profound change may be facilitated (Fullan, 2003). Fink (2000) concurs, explaining that any attempt to effect change that ignores the school and teacher context, is doomed to failure. Petrides & Guiney (2002) suggest that by using information schools can evolve from bureaucracies founded in the industrial age, to knowledge-based ecologies for the 21<sup>st</sup> century. However this leap will be hampered if schools are unable to effectively tame their management information systems. The school culture is significant in influencing the extent to which a management information system can be tamed.

Culture is one side of a triangle with power and structure forming the remaining sides (Bennet, 2003). Schools are loosely coupled (Pegler, 1992, Sergiovanni, 2001) with flat organisational structures (Hedberg & Bloch, 1992) this may impede the effective use of their information systems. The strength offered by a loosely coupled structure can also be a weakness because such systems can “dissolve into anarchy” (Weick, cited Sergiovanni, 2001, p.25). If the school culture does not consider that data in a computer system is of benefit, then the data will not be relied upon. Gipson (2003) agrees that each school has a unique culture that should be celebrated, but believes schools need to become more tightly coupled so that teaching and learning is placed as their central purpose.

Visscher & Wild (1997) allude to this importance of context when they suggest that no single feature of information systems, be it the design quality, the implementation process, or the educational organisation which is implementing the system, can completely account for how a system will be used and what impact it might have. It is a *mélange* of these variables that will be determinate. When looking at the impact of a school information system it is important to make explicit the context of that usage.

### **The concept of learning outcomes is fraught and complex**

Effective schools utilize research and evidence and harness the resulting information to

Adapt teaching and learning strategies as a means of improving student outcomes (National Teacher Research Panel, accessed 4/05, p.1).

International Education Ministers have suggested that a focus on learning outcomes has given importance to the need for measurable education standards (OECD accessed 2/05). Sergiovanni (2001) counters this, finding it an elevation of technocracy over democracy. This reliance on measurement will inhibit the development of schools that have character.

The International Education Ministers accept that not all learning outcomes can be formally assessed and suggest other forms of learning evaluation including student portfolios. They consider that information on the quality of learning outcomes should be provided and such transparency of information will provide a lever to improve educational performance.

This institutional link between learning outcome and performance is problematic. Fielding (provided by Univ. Sussex 2005) distinguishes high performance schools, i.e. Learning Organisations, from person centred schools, i.e. Learning Communities. Fielding might interpret the Education Ministers stance as manipulative, the personal (learning outcome) for the sake of the functional, *improved*, (my italics) educational performance. The move to self-managing schools has led to an increased emphasis on performance, which in turn has led to greater anxiety for teachers as they struggle to meet government and social demands (Blackmore, 1997). She finds this ironic, given that research suggests that learning outcomes are the result of a broad range of different factors, of which student and teacher interactions are the most important. Mulford (2003) asks



whether performance driven procedures actually lead to an enhancement of valued learning outcomes, his emphasis focusing on value not performance.

As I said in my introduction, I do not consider the term learning outcome to imply performativity but I do see it as an indicator of progression. Yes we must resist the pull of performativity (Fullan, 2005) but we must also be accountable to learners and ensure that they benefit fully from the short time they have in the learning environment. A concern for learning outcomes in this context is a person centred concern, not a performance based concern.

### **Schools are not benefiting from the system**

The ICT in Schools Survey 2004 found that the average expenditure per pupil on ICT in schools ranges from £69 in primary schools, £91 in secondary schools to £297 in special schools. Whilst only a proportion of that spend will be on a management information system, nonetheless this represents a significant chunk of a school budget and the figure is rising each year.

If schools are not benefiting from the system this should raise concern amongst school leaders, education authorities and parents. Is it the design of the systems that precludes effective use? Is it the lack of effective training and support? Is it the constant development, which as Isdale (1996) re-counts requires schools to continually update skills in order to keep up with the system? By contrast Nolan et al. (2001) consider this frequent development of the New Zealand information system MUSAC, to be a feature of the system. Headteachers of some schools (but by no means all) that I support suggest that their school could no longer function without the systems. What factors lead to this diversity of benefit analysis?

If schools are not benefiting from the systems who are benefiting? Is it the software developers (who are paid to create software), the Local Education Authorities (who may be footing the bill for the use of the software) or governments (who are using the software to extract data, that can be used in defence of educational policy). Or should the statement be that in fact Learners are not benefiting from the systems? These questions need further investigation.

### **The whole school needs to own the system**

Leadership is an important element of information systems usage in schools, as will be discussed later. However the system should not be seen only as a tool for managers, the **School** in Schools Information Systems is significant. From my own professional practice I have seen different barriers to effective whole school usage. An information system may be regarded by school staff as relevant only to managers, this could be due to Headteacher perception as evidenced by Strickley, or it might be due to teachers lack of knowledge about what the system offers. Particular school departments can take up the role of system champions. Often in a secondary school this will be the Science or Mathematics Departments, who may see themselves as natural gatekeepers of information. Their appropriation of the information system can lead other departments to ignoring it, not seeing it as useful to their own subject area.

In order for schools to maximise their investment (both financial and in terms of people hours) in information systems, these systems need to be seen as relevant to the whole school, not just to the administrators or the school leaders. This whole school adoption is evidenced only by Telem & Pinto in presented in this review. This area needs further investigation to discover if schools do own the systems or regard them as management/government tools.

Where systems are successful teachers are using them frequently and parents perceive the system outputs as high quality

The examples provided by Telem & Pinto or Doornekamp & Drent offer a vision of information systems being used effectively, supporting teaching and learning and empowering families. Natrins also offers an optimistic image of systems use in education. However there does not appear to be much published research that supports these views. This has implications for government policy and for educational research, as I will discuss later.

It could be argued that schools that use information systems successfully are more effective, but effective is a non-neutral term. The concept of an effective school is a social construct (Riley & MacBeath, 2003) and whilst some commentators regard the employment of ICT in schools as a performance indicator, others suggest ICT itself is a non-neutral power which can distort reality, leading to an elevation of quantifiable over qualitative experiences (Wright\*, 2002, cited McFarlane, Bardburn & McMahon, 2003).

The essential question is what are management information systems supposed to be doing? Is it providing information for learners, for teachers, for education authorities, or for governments? Is it for the production of data i.e. hard system information, or is it for the support of teaching and learning i.e. soft system information?

*\*I was not able to find the original of this article in Industrial & Commercial Training. An article exists but by a different author and on different page numbers.*

## **Technology**

### **Data needs to be trustworthy**

Strickley found that schools are not using the information system as an organic alerts system but as a data repository. Yet the example provided by Telem & Pinto indicates that the system can be used exactly as an organic alerts system. If schools are maintaining dual systems as reported by Isdale, then it will be difficult for them to rely on either system, as there will be no guarantee of which is accurate and up to date. Green (2000) considers it essential that schools collect hard data to balance the qualitative information that is available.

If the management information system is seen as a vehicle for producing government returns then only the requisite information will be entered. The data needs to be accurate and up to date, and used daily, to be relied upon by school staff i.e. embedded as Gipson (2003) describes. In my own professional practice I see examples of both extremes, schools that put the minimum required into the information system, and schools that put most of their data into the system. It is the latter type that can rely on the data to be trustworthy. Those schools that use the system only to tick government or LEA boxes, tend not to rely on the data as trustworthy, but rely on alternative data sources such as local professional knowledge which is not hardwired into any information source. However this has disadvantages as the sources of knowledge are proliferate and it is difficult to determine which is accurate.

**National government requirements force reactive system development**

Whilst the range of functionality offered by information systems has increased, particularly over the last 5 years, systems have been reactive to central government dictat, often at the expense of school requirements. Becta have recently canvassed Local Education Authorities on their schools use of systems and the reactivity to government demands has been flagged as a concern. Wild & Walker (2001) believe this reaction to government demands impedes the future development of information systems. The software supplier SIMS has confirmed this, (Smith & Wild, 2001), saying that it has to comply with Government dictated school information returns (such as Attendance Returns, Pupil Level Annual School Census and most recently the Workforce Return) and therefore directs most of the system development to this area.

Whilst it is central government that deploys taxpayer's money to local education authorities and then to schools, it is locally managed schools that decide to purchase these systems and take funds from other school projects to finance them (cf. Cook the Books, Guardian Newspaper 12/04/05). Therefore the schools' requirements should take precedence over the need for government returns but this does not appear to happen in reality. Again we return to the question of who is it that these systems are devised for, school, LEA or government?

**Not all the system capacity is being used**

Studies by Wild & Walker (2001) and by Strickley (2004) indicate that management information systems offer functionality that schools are not able to use. Wild & Walker go to great lengths to list the modular functionality offered by systems, but do not offer any insights into why such functionality is underused. This is ironic when they construe that teachers and school managers are demanding more from systems. How can it be that more is demanded yet not all that is offered is being used?

The importance of training and support is again emphasized here. School staffs need to understand the basics of the system and then move through a progressive programme, which enables them to extract more from the system. Each school should have a clear development plan for the utilization of their management system in terms of both who will access it and what they can expect to extract from it. This requires vision from school leaders, who must not shy away from the responsibility of taming the management information system so that it enhances teaching and learning rather than just burdening it. However such a vision is not always apparent in schools, school leaders may not share this vision and may respond to teachers critique of information systems.

Functionality is developed in such systems by way of user communication groups. Schools and LEAs need to become empowered in such groups by representation. However this empowerment is another time resource which is not always easy for schools to provide.

**Systems need to be easy to use**

It seems that information systems are complicated beasts. Schools complain about the number of keystrokes required to execute commands, the complexity of reporting systems, the lack of ease of use compared to other products such as Microsoft Excel, the lack of intuitiveness of the systems. Until recently the systems were accessible only whilst on school premises. This means that learning the system has had to fit into an already busy school day. Currently only 29% of secondary schools and 12% of primary schools have networks that can be accessed from outside of the school buildings. The evolution of systems was based on ad-hoc development by IT staff, many of who were not trained systems developers (Wild & Walker, 2001). Their lack of ICT expertise may have hampered the development, producing systems that were somewhat amateur.

Easy to use is ironically also a social construct. Recently I have supported schools as the systems have moved from one database technology to a different technology. What previously seemed cumbersome and not user friendly, in the light of different technology is now reported as the 'old easy system'. In effect it is what is familiar that is perceived as easy to use. The amount of resource in terms of training and support may also have a bearing on how easy to use a system is perceived.



**The benefits of systems need to be interpreted**

The technocratic view of information systems, which imply that knowledge management can be reduced down to a software solution contrasts with the social construct perspective, which sees knowledge management “as the result of interactions between stakeholders” (Sallis & Jones, 2002, p32).

Vlug and Visscher perceive information systems as having the potential to improve pedagogical practice and enhance learning, yet few teachers view information systems in this way. Telem (1996) proposes a phenomenological approach drawing school staff attention to the importance of the system for them. He notes that the possibility exists of resistors of information systems but considers this resistance can be overcome. Hargreaves's (1999) stark message to school leaders is not to overcome resistance but simply to get rid of resistors! Not exactly a benefit for schools.

Alternative viewpoints are a necessary feature of democratic schools, maintaining the status quo is unhealthy. Consensus on the perceived benefits of information systems needs to be negotiated, with an honest analysis of all the variables including the value negative ones, so that an accurate picture can emerge to inform decision making.

**There are not enough experts in management information systems**

Gipson (2003) cites a general teacher shortage as one variable that could impact on the number of experts available in schools. Headteachers struggle in some areas to recruit any teachers let alone those with specific ICT skills. This shortage will compound the lack of embedded use of information systems. Wild & Walker claim that early implementation teams contained teachers and certainly the SIMS suite was initially developed by a combination of ex teacher and Local Education Authority staff. What constitutes an expert in management information systems? Can teachers be experts in this area alongside their existing duties? Nolan (2001) describes the development of MUSAC in New Zealand as a joint enterprise between developers and customers so that end user resolutions to problems could be included in software development. Thus expertise is a fusion of ICT skills and teaching skills.

Managers of ICT support teams may have a bias towards recruiting those with technology skills and qualifications, rather than knowledge of teaching and learning. There could be a role for universities and colleges in designing courses which blend the two skill sets so that schools can recruit appropriately skilled personnel. There is also a value here in re-defining the kind of staff schools need in the way Walsh (2002) describes, so that a broader range of skills are deployed in schools.

**Whole school networks are needed**

When schools first began to adopt local area network technologies they looked to Local Education Authorities for advice and support. From my experience as a technical professional in education authorities I suggest that schools were advised to keep the curriculum network separate from the administrative system network, so that personal, financial and performance data would not be accidentally accessed inappropriately. Some schools linked curriculum and administrative systems so that teachers could access information systems in the classroom, but this was far from the norm.

The ICT in Schools Survey 2004 distinguishes the number of computers used for management and administration from the number used for teaching and learning, confirming the stereotype that information systems are for school administration not for supporting teaching and learning. The study found only 55% of primary schools and 68% of secondary schools had networks that integrated curriculum and management functions. Classroom teachers have to work hard to actually access their information systems in many cases, visiting administrative system computers in the school office or staff room rather than in their own working space, the classroom. It is only when teachers have immediate access to the information system that they can begin to engage with it regularly and integrate it into their pedagogy.

## **Organisations**

### **Change Management**

Dias et al. (2001) depict the process of change and educational development as being closely connected to the amount of participation that social actors are allowed in effecting the change. Ramos (2001) echoes this viewpoint, if change is imposed teachers will resist, if they are involved in the change they will gradually work with it. Furthermore any change which fails to take into account the context of the school, and the context of the teachers, is unlikely to succeed (Fink, 2000). Schools are faced with two types of change: the change in their structures and modes of operation, initiated by governments in the form of frequent legislative and policy implementations; and the increasing expectations placed upon them by society, as the influence of other agencies such as religion, family or community diminish. These twin forces of change are leading schools to a greater reliance on both information and information communication technology.

The OECD has been especially interested in how schools change and cite the success criteria of any ICT projects as being related to their compatibility with teachers existing norms and beliefs, with the context in which the change happens and with the support teachers receive as the change takes place Venezsky & Davis (2002).

Change management is an art not a science, schools need to evolve over time with support. Sometimes external variables such as budget, policy, technology or politics force change at an inappropriate pace and with insufficient regard for the core values of the organisation or the people affected by the change. When this happens the change is less likely to be successful but instead will be either resisted actively or ignored passively.

Many organisational change programs that failed probably did so because they ignored cultural forces in the organisations in which they were to be installed. (Schein, 1990, p. 118)

In the context of information systems in schools the existing values held by teachers will be based around their concern for the welfare of their pupils, a concern for their own workload and a concern for the role of the school in the community. Using an information system should add some value to teaching and learning or the implied systemic change cannot be justified and will fail to be accomplished. However change per se is not bad. If implemented sympathetically change can achieve much of value and can lead to a better learning environment (cf. the Magic Sandwich Project, McConnell, 2003).

**Information can empower**

Schools need to move from data collection as an exercise to information transformed into knowledge as a process. This transformation can have a real impact on learners resulting in better decision-making by schools and facilitating personalised learning (Gipson, 2003; Petrides & Guiney, 2002). It is not just a case of having the data but of using it imaginatively and motivationally (Sergiovanni, 2001) using it productively (Sallis & Jones, 2002).

The social construct perspective sees knowledge as a creation that springs from exchanges between social actors. The knowledge held in a school information system could be constructed in a variety of ways, and various interpretations of this knowledge are possible. Empowerment of one social group may lead to the disempowerment of another group. In the case of Telem & Pinto's 2004 research, this anxiety about empowerment was manifested by the teachers, one of whom was dismissed as a result of the empowerment of parents by the information provided by the system. Personalised learning (cf. Every Child Matters, DfES) sees learning aimed at the individual (rather than a group such as a registration group or a year group) and may be facilitated by the use of information systems to underpin teaching and learning, with an agenda of a personalised learning space (based on IT) for every child. However personalised learning has the potential to empower learners but reduce the power of teachers because they are no longer seen as the source of knowledge (Blackmore, 1997) Personalised learning should not infer the removal of the guardianship role that schools perform for students (Wilkins, 2005).

### **Leadership is crucial**

Who would be a school leader in the 21<sup>st</sup> century? So much to do, so much expected of you and so much advice to follow. Green (2000) considers it essential that school leaders gain not just an understanding of technology but a liking for it. He is very comfortable with the concept of performance indicators suggesting monitoring of key activities is critical, to balance the qualitative data provided by observation and walking. Communication is very important and the focus of this communication is on leaders' ability to present information. Green's technological stance on school leadership is at odds with other educationalists. He claims that

To be a Head ...in the 21<sup>st</sup> century we would argue that a certain passion for new technology is essential. We live in a society that relies on science and technology for its well-being (Green, 2000, p.120)

This will be met with skepticism in some quarters. Sergiovanni contrasts the system world of the sort advocated by Green, with the life world. The system world is that of instruments often in the form of management systems, which are meant to help schools to be more effective. However the life world must steer the system world or the school character will be eroded. Green suggests that systems balance the qualitative (soft) data available to school leaders whereas Sergiovanni advises school leaders that it is the life world that provides bedrock for human capital. If the system world is allowed to dominate then management systems (*in the broader sense*)

become ends in themselves, assigning value to schools and students based on adherence to the system's requirements (Sergiovanni, 2003, p.19).

He advises school leaders to stop communicating and instead hold conversations (2001), in contrast to Green. Communication is a one-way dissemination; conversation facilitates a reciprocal trading of ideas and expects a commitment to mutuality.

Leadership theory has evolved over many years, leaders were born (trait) (Horner, 2003 Bryman, 1999) or leaders responded to situations they found themselves in as well as their predisposed behaviours and traits (contingency theory) (ibid). Leaders must adapt to change and manage an organisational culture. They need to be assessed in terms of the motivation of their followers. They should move from transactional leadership, which relates to their own power, to transformational leadership, which relates to them motivating their followers. Is it possible for one person to be the leader? Should leadership now be distributed not vested in one individual? Perhaps most importantly for schools, should leaders become the facilitators of leadership in others? (Horner, 2003)

Rutherford (2005) suggests that school leadership makes a bigger difference to academic standards than has been previously considered. The EPPI center review of 2003 also suggested effective school leadership impacts on student outcomes but that it is an indirect impact, which occurs as a result of intermediate factors such as teaching staff, the school organisation and parent and community relationships. The review also claims that it is distributed leadership that will have an effect on student outcomes. Bush (2005) contests these findings, citing studies that do not confirm clear causal links between leadership and student outcomes. Mulford (2003) cautions against seeing Leadership as a defined and static state, what works in one context may not be replicable in a different context. Levacic (2005) goes further, asking whether it is even possible to conclude causal relationships from empirical observations.



5 of the studies I have reviewed specify the importance of the leadership role if schools are to gain from their information systems, yet there is no mention of leaders' use of management information systems in the EPPI review or in Rutherford's discussion.

### **Training and support are crucial with a focus on education issues**

Green (2000) advises that to get the maximum benefit from ICT, schools should spend the same amount of money on training as was spent on the purchase of the equipment. The ICT in Schools Survey 2004 found that 73% of secondary schools teachers had received professional development in ICT-related practice, and that this figure varied greatly depending on whether the school perceived itself as e-confident. Fung & Ledesma (2001) concur on the importance of training. Their analysis of an information system in Hong Kong schools, reports that training, whilst seen as an important task, was expensive in both cost and time for school staff.

Telem (1996) argues that more training and support will result in better staff approval of the system and better performance but he doesn't elucidate on whether he means performance of school staff, performance of the school or performance of the information system. Chatzilacos (2001) et al. report the benefits of training when implementing ICT projects in schools. Whilst the projects were not specifically information systems, the Greek schools studied benefited from training that focused on both the systems (software and computer applications) and the pedagogical issues surround ICT use in schools.

Whilst training is required it needs to be of a sufficient quality and type to benefit schools. The New Opportunities Fund has invested £230 million in the last 6 years for the training of teachers in ICT skills, yet this investment has failed to produce real innovation in teaching & learning (Gipson, 2003).

**Using a system has a time cost versus benefit**

Anyone that has worked in a school knows the pressure of time, which is an insufficient resource. Using an information system demands a great deal of time: time for data input and verification; time for learning the mechanics of the system and then learning again as the system changes; time for producing outputs; time for interpreting those outputs; time for reflection on what contribution this time guzzler is actually making to teaching and learning.

When considering management information systems, schools and governments need to be realistic about how much time will be devoted to inputs in all their guises, before any benefit will occur. International government pressure on schools to utilise technology to make them more effective has to be justified in terms of realistic expectations of the efficacy provided. It is hard to assess causal links when we can't go backwards and take the time already expended out of the equation (Levacic, 2005). Contrary to Natrins (2004) findings, I believe that systems suppliers and educational researchers need to be cautious in their claims about the possible timesavings offered.

## **Implications**

### **Implications for policy**

There are many policy changes underway which directly affect schools in the 21<sup>st</sup> century. The UK Schools of the Future initiative will see every secondary school in England redesigned, re-built and equipped with state of the art information and communication technology over a 10-15 year period. The Specialist Schools agenda will confer a specialist status on every secondary school (currently 76% of all secondary schools in England now have specialist status). In the guise of Every Child Matters, the DfES has an agenda of a personalised learning space for every child, again basing this on ICT. Schools groan under the weight of these continuing policy changes and yet persist in trying to accommodate them all as the business of teaching and learning goes on.

The UK Labour government has spent many millions of pounds on education, much of it on ICT. The DfES and Becta are engaged in researching the impact of this spend on teaching and learning, reporting in published research reports, and addressing conferences and workshops such as the annual BETT technology exhibition. If, as this review suggests, school information systems are not being used effectively, the relentless policy wagon should halt, change gear and evaluate what the purpose of this spend is and how better value can be achieved.

The review has highlighted a skill mix shortage, information management expertise combined with teaching expertise. Are universities and colleges, especially teacher training agencies addressing this skills shortage? The Teacher Training Agency Handbook of Guidance for Qualifying to Teach (2003) lists recording progress S3.2.6 (p.37) as a requirement for those awarded Qualified Teacher Status. The emphasis needs to be changed from recording data to using it analytically so that it informs teaching practice. Their advice that trainees could create their own record

keeping system takes us back full circle to the issue of existing information systems not being used by schools.

**Implications for practice**

My role as a supporter of information systems in Guernsey primary, special and secondary schools is extremely diverse. My main focus is on making the systems as simple as possible for schools to learn and extracting the maximum value from them. I encourage schools to record pupil attendance, assessment information, special needs information, and behaviour management information. I encourage them to record staff absences, record staff in-service education and training and commit the school timetable to the computer system. All of this takes a lot of time and different members of staff to undertake the work.

I have always put a great emphasis on training and support for school staff, and this research has encouraged me to continue that emphasis. If these systems are to be used effectively they need to be supported by committed professionals who have a foot in both camps, both the technical world of ICT but more importantly the world of education, where teaching and learning takes precedence over systems. The greatest compliment paid to me professionally is when teachers comment that I really care about the pupils. My professional practice will continue to steer away from the notion of performativity and instead focus on learners both children and adult.

### **Implications for research**

The contribution school management information systems could make to learning outcomes does not appear to have been previously researched. The focus of early research into school information systems has been on the design and implementation of systems. As systems have matured their functionality has expanded but they do not appear to be seen as informing tools for learning in schools. In most cases they are viewed as data sinks, occasionally used for government returns or largely unused by teachers or school managers.

Critical social theory suggests we should ask questions of the social world and this review prompts me to ask the following questions.

- Why is money spent on systems that lay dormant?
- Do these systems have anything to contribute to teaching and learning?
- Is the reliance on ICT a case of creeping industrial managerialism in schools?
- Are there gender implications in the utility of information systems?
- Are learning outcomes a social construct, which reinforce the notion of performativity?
- Should schools be viewed in the same context as industry, centres of production with inputs and outputs?
- Is lack of training and support the reason why systems are not utilised?
- Can 'best practice' be useful if taken out of the context in which it occurs? Indeed is 'best practice' a term of any significance?

I would like to engage in further research to address these issues.





**Implications for my own learning**

Before beginning this research I had an ethnocentric view of school information systems. I believed that the issues around schools and information were unique to the UK, that it was only UK schools that had been through the Local Management of Schools agenda and therefore my research would be confined to the UK. It has been extremely enlightening to find that these issues are being debated in many countries. Internationally the view of schools as centres of performance is problematic, and the tensions between technocratic positivist solutions and social constructionist views of social life are global.

My views of the educative process and the concept of learning outcomes were also quite simplistic when I commenced this review. This research has alerted me to the notion that achievement is a social construct and will be used as a weapon by many social actors, with differing agendas, engaged in the education debate. When engaging in research or debate on these issues I need to be more aware of how and why different groups appropriate language for their own purposes and that interpretation of terminology can be far from obvious.

## **Strengths and limitations of the review**

### **Strengths**

I have tried as much as possible to present a review which is international rather than confined to the country where my own experience of management information systems is based, although I draw attention to the limitations of language shortly.

I have tried to draw on a wide range of sources and in the appendices produce maps of where I found data, what I rejected and why. It should be possible for anyone to replicate this study.

### ***Limitations***

#### **Language**

An obvious limitation of this review is that it is limited by the need to search for studies in the English language. As the international nature of the studies found testifies, management information systems are being implemented in many countries. The OECD studies found go some way towards mitigating this limitation but had I been able to search for studies in Russian or other Baltic States languages, or in more Asian languages I may have discovered more studies were available.

#### ***Gender***

Isdale's research was the only research I was able to find which looked at information systems from the perspective of gender. I consider this a major limitation of the review, particularly in the light of the findings from the MORI (accessed 2005) study, which shows there are gender implications in the usage of information systems by school staff. Blackmore (1997) flags up a concern about the re-gendering of educational work. I think this issue will be a facet of any future research I am able to do in this area.

***Ethnicity***

I was able to find only one study that looked at ICT usage from an ethnicity perspective. This study was excluded from the review because it focused on general population use of ICT, not specific use of management information systems in schools. The reviewed research did not present ethnicity as a concern, but that does not mean it is a problem free area, only that I did not find any research that identified it as such.

**Peer Review**

One of the strengths of a systematic review should be that it is available for peer review. Unfortunately due to time restrictions this research has not been peer reviewed. I do have education colleagues who would like to access the review when it is completed but that is not the same as engaging in peer review.

**Time**

As a part time education researcher with a full time work commitment, this review is inevitably restricted by time available. It is expected that systematic reviews take between 9 and 12 months full time whereas I have been able to spend only 9 months part time. This limitation will have reduced my access to all relevant studies.

**Team versus Individual Research**

Ideally a systematic review is the product of a team effort. This reduces the possibility of individual bias. Because this research forms a part of an Education Doctorate course for one individual, it would not have been appropriate to engage others in the research. I have tried not to introduce bias, accepting or rejecting studies on the basis of their contribution to the knowledge base rather than any fixed ideas I have about area.

**Grey Publications**

I have not had much access to unpublished works such as Masters or Doctoral theses. By joining Belmas I was able to find details of some unpublished work but

this did not identify any studies in my own area of interest. Knezek & Christensen (2002) looked specifically at theses (as well as published research), but although they were focused on ICT in education they did not research information systems in schools.

### **My vision for Management Information Systems**

Management Information Systems have developed over many years to offer schools varied functionality. How much of this functionality is based on actual school requirement and how much is based on governmental requirement is open to debate, Isdale may offer a view at one extreme, Gipson may offer a view at a different end of the spectrum.

My own view is that these systems should offer something to learners. Learners should be able to access information about themselves, to verify it (within the confines of the Data Protection Act). They should be able to contest the accuracy of this data in a way that is currently prohibited. They should also be encouraged to engage in debate with the data. For example systems are able to record that pupils were ejected from lessons to serve time in a Time Out scenario. Pupils should be able to access this to offer insight as to why they perceive that they were ejected from a particular lesson. Learners should be able to engage with their own learning trajectory and offer insights into why they are not 'on course' in the school's perception of that construct, if that is the case or to challenge the concepts of 'on course'. In other words learners should be encouraged to engage with their learning situation. Learners should be able to access data about the delivery of teaching, contesting how much access to appropriately qualified and experienced teachers has been offered to students. However such challenge will be moderated by the age and experience of the challenger.

Learners and their responsible adults should be able to extract data from systems to challenge how teaching is offered, for example has a Key Stage 3 course been delivered by appropriately and consistently qualified teachers. Encouraged to take responsibility for their own learning, learners could benefit from E-portfolios being brought into the remit of Management Information Systems. This does not negate the need for teachers but does change the relationship between teacher and learner. Giving each learner an individual e-learning space presents both problems

and solutions to problems. Other issues such as age of learner, benefits to learner vs. benefits to organisation also come into play here.

With the power of this suggested access to information comes the responsibility to use the systems appropriately. Learners need to engage with the information to address their own learning situation. The emphasis for them is not on quantifiable, hard data (I achieved Level X) but I need to do Y to make progress. Also learning becomes a negotiated construct between parties where power relationships become blurred or certainly re-organised. This has implications for both teacher and learner.

However the preceding information does not preclude schools from using existing systems. There is a wealth of data available to school staff which is currently underused. The emphasis should be to extract this information in as easy a manner as is possible, and then to use it for learner's benefit. This assumes that school staff accessing the system, are trained in both the mechanics of the technology and the way the information can assist in the learning process. This is not a button pushing exercise but a real training opportunity that focuses on learners and on teachers and allows for power negotiations between parties.

In honesty I have not yet encountered any one institution that emulates this, but I have worked with several schools that might perceive themselves as working towards this vision.

### Appendix 1: Search Strategy Sources of Data

Where Found	Website
British Education Index	<a href="http://www.lsda.org.uk">www.lsda.org.uk</a>
British Education Index	<a href="http://www.leeds.ac.uk/educol/documents/00003687.htm">www.leeds.ac.uk/educol/documents/00003687.htm</a>
Kluwer Website	<a href="http://www.kluwer">www.kluwer</a>
Becta	<a href="http://www.becta.org.uk">www.becta.org.uk</a>
EPPI Centre Website	<a href="http://eppic.ioe.ac.uk/EPPIWeb/home.aspx?page=/reel/review_groups/assessment/revi...">http://eppic.ioe.ac.uk/EPPIWeb/home.aspx?page=/reel/review_groups/assessment/revi...</a>
Sussex University Library	
British Education Index	<a href="http://www.oecd.org/dataoecd/39/33/2739498.pdf">www.oecd.org/dataoecd/39/33/2739498.pdf</a>
OECD website	<a href="http://www.oecd.org">www.oecd.org</a>
DFES website	<a href="http://www.dfes.gov.uk/research/data/uploadfiles/ict_in_schools_survey_2004.pdf">www.dfes.gov.uk/research/data/uploadfiles/ict_in_schools_survey_2004.pdf</a>
OECD website	<a href="http://intradev.oecd.org/els/ict/GR/GR00.htm">http://intradev.oecd.org/els/ict/GR/GR00.htm</a>
Referenced in other publication	<a href="http://wwweduc.ge.ch/cptic/prospective/projets/ifip/publications/Educ_informV2-4.html">wwweduc.ge.ch/cptic/prospective/projets/ifip/publications/Educ_informV2-4.html</a>
reference in other publication	<a href="http://wwwedu.ge.ch/cptic/prospective/projects/ifip/publications/Educ_inform V2-4.html">wwwedu.ge.ch/cptic/prospective/projects/ifip/publications/Educ_inform V2-4.html</a>
OECD Website	<a href="http://intradev.oecd.org/els/ict/nl/nl103.html">http://intradev.oecd.org/els/ict/nl/nl103.html</a>
OECD Website	<a href="http://intradev.oecd.org/els/ict/nl/nl102.html">http://intradev.oecd.org/els/ict/nl/nl102.html</a>
OECD website	<a href="http://intradev.oecd.org/els/ict/nl/nl104.html">http://intradev.oecd.org/els/ict/nl/nl104.html</a>
OECD website	<a href="http://intravdev.oecd.org/els/ict/nl/nl01.html">http://intravdev.oecd.org/els/ict/nl/nl01.html</a>
Sussex Univ. Library	<a href="http://www.tcrecord.org">www.tcrecord.org</a>
OECD website	<a href="http://intravdev.oecd.org/els/ict/PT/PT02.htm">http://intravdev.oecd.org/els/ict/PT/PT02.htm</a>
OECD	<a href="http://intravdev.oecd.org/els/ict/PT/PT00.html">http://intravdev.oecd.org/els/ict/PT/PT00.html</a>
OECD	<a href="http://intravdev.oecd.org/els/ict/FIN/F102.htm">http://intravdev.oecd.org/els/ict/FIN/F102.htm</a>
	<a href="http://intravdev.oecd.org/els/ict/HU/HU01.htm">http://intravdev.oecd.org/els/ict/HU/HU01.htm</a>

Dfes website	www.dfes.gov.uk
Dfes website	www.dfes.gov.uk RR633
Dfes website	www.dfes.gov.uk RR597
DfES Website	www.dfes.gov.uk RR523
DfES website	www.dfes.gov.uk
Australian Education Index	<a href="http://www.ascilite.org.au/ajet/ajet8/hedberg.html">http://www.ascilite.org.au/ajet/ajet8/hedberg.html</a>
Australian Education Index	
Subscription	Belmas
DfES Website	www.dfes.gov.uk RR424
DfES Website	www.dfes.gov.uk/ictinschools
DfES Website	www.dfes.gov.uk rr 450
Australian Education Index	<a href="http://www.ascilite.org.au/ajet/ajet8/pegler.html">http://www.ascilite.org.au/ajet/ajet8/pegler.html</a>
Eppi Centre website (in Research Evidence in Education Library)	<a href="http://eppi.ioe.ac.uk">http://eppi.ioe.ac.uk</a>
Becta Website	<a href="http://www.becta.org.uk/impact2">http://www.becta.org.uk/impact2</a>
NCSL website	www.ncsl.org.uk
Ofsted website	www.ofsted.gov.uk



**Appendix 2: Journals Searched**

Australian Journal of Educational Technology

British Journal of Educational Technology

British Educational Research Journal

Computers & Education

Education, Communication & Information

Education & Information Technologies

Education Management Administration & Leadership

Guardian Newspaper

International Journal of Educational Research

Management in Education

Teachers College Record

Times Education Supplement

### Appendix 3: Details of Research Studies Included in Systematic Review

Doornekamp Gerard, & Drent, Marjolein (2001), *A Case Study of ICT & School Improvement at Bassischool 'De Verrekijker' Armstenrade, The Netherlands*, <http://intravdev.oecd/els/ict/nl/nl01.html> accessed 18/02/2005.

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managing their work environment, *Education & Information  
Technologies Official Journal of the IFIP Technical Committee on  
Education*, 2, pp. 263-274.  
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mV2-4.html](http://www.educ.ge.ch/cptic/prospective/projets/ifip/publications/Educ_infor_mV2-4.html) accessed 17/02/2005.
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**Appendix 1a**  
**University of Sussex**  
**Sussex Institute**  
**Research Ethics Checklist**

**UNIVERSITY OF SUSSEX  
SUSSEX INSTITUTE  
RESEARCH ETHICS CHECKLIST**

The Standards apply to all research undertaken, whether empirical or not.

When planning non-empirical work, you will need to consider how specific standards and guidelines may best be applied to your research approach, processes and potential impact. Where there is no equivalent for non-empirical work, tick 'not applicable', explaining briefly why in the comment box for each standard.

**IMPORTANT RULES**

If you want to EMAIL this document with your choices, please double click on your CHOICE CHECKBOX, save the document and email it.

If you want to just PRINT this document and fill it out manually, go to File and then Print. It will print it out in Landscape format.

***Standard 1: Safeguard the interests and rights of those involved or affected by***

1.1	Will you consider the well-being, wishes and feelings, and best interests of those involved or affected?	Yes ✓ <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
1.2	Will written and signed consent be obtained without coercion? Will participants be informed of their right to refuse or to withdraw at any time?	Yes ✓ <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>

1.3 Will the purposes and processes of be fully explained, using alternative forms of communication where necessary and making reference to any implications for participants of time, cost and the possible influence of the outcomes?	Yes ✓ <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
1.4 Where covert research is proposed, has a case been made and brought to the attention of the School Research Governance Committee and approval sought from the relevant external professional ethical committee?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A ✓ <input type="checkbox"/>
1.5 Does the proposal include procedures to verify material with respondents and offer feedback on findings?	Yes ✓ <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
1.6 Will conditional anonymity and confidentiality be offered?	Yes ✓ <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
1.7 Have you identified the appropriate person to whom disclosures that involve danger to the participant or others, must be reported?	Yes ✓ <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
<p>Please add further comments if helpful to clarify the above</p> <p>Whilst I would wish to maintain anonymity of respondents I would disclose data which might prove contentious e.g . where a possible breach of the data protection act had occurred. In the case of discussions with students, conversations were reported anonymously to the School Leadership Team.</p>			



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**Standard 2: Ensure the safety of researchers undertaking fieldwork**

2.1	Have you identified any physical or social risks to yourself in undertaking the fieldwork?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A ✓ <input type="checkbox"/>
2.2	Will you have access to an administrator who will keep a diary of any fieldwork visits and your whereabouts?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A ✓ <input type="checkbox"/>
2.3	Have you considered how you will collect your material and whether this could make you vulnerable?	Yes ✓ <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
<p>Please add further comments if helpful to clarify the above</p> <p>Data were collected on school premises during the normal school day or at the end of the school day, appointments were made beforehand and meetings were always conducted with the knowledge of the school leadership team. Neither the researcher or participants were placed in a vulnerable position as others were always on hand if required.</p>				

**Standard 3: Uphold the highest possible standards of research practices including in research design, collection and storage of research material, analysis, interpretation and writing**

3.1	Will literature be used appropriately, acknowledged, referenced and where relevant, permission sought from the author(s)?	Yes ✓ <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
3.2	Is approach well suited to the nature and focus of the study?	Yes ✓ <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
3.3	Will the material be used to address existing or emerging research question(s) only?	Yes ✓ <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
3.4	Does design include means of verifying findings and interpretations?	Yes ✓ <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
3.5	Where research is externally funded, will agreement with sponsors be reached on reporting and intellectual property rights?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A ✓ <input type="checkbox"/>
3.6	Will plans be made to enable archiving of data?	Yes ✓ <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>

Please add further comments if helpful to clarify the above			

***Standard 4: Consider the impact of and its use or misuse for those involved in the study and other interested parties.***

4.1	Have the short and long term consequences of been considered from the different perspectives of participants, researchers, policy-makers and, where relevant, funders?	Yes ✓ <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
4.2	Have the costs of to participants or their institutions/services and any possible compensation been considered?	Yes ✓ <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
4.3	Has information about support services that might be needed as a consequence of any possible unsettling effects of itself been identified? <sup>2</sup> Where is the note to which this number refers?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A ✓ <input type="checkbox"/>
4.4	Are the plans flexible enough to take appropriate action should your project have an effect on the individuals or institutions/services involved?	Yes ✓ <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>

Please add further comments if helpful to clarify the above Some student participants withdrew from but they were replaced with other students who felt more confident as research participants			

**Standard 5: Ensure appropriate external professional ethical committee approval is granted where relevant**

5.1	Have colleagues/supervisors been invited to comment on your research proposal?	Yes ✓ <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
5.2	Have any sensitive ethical issues been raised with the School Research Governance Committee and comments sought?	Yes <input type="checkbox"/>	No ✓ <input type="checkbox"/>	N/A <input type="checkbox"/>
5.3	Has the relevant external professional ethical committee been identified?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A ✓ <input type="checkbox"/>
5.4	Have the guidelines from that professional committee been used to check the proposed research?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A ✓ <input type="checkbox"/>

Please add further comments if helpful to clarify the above			

**Standard 6: Ensure relevant legislative and policy requirements are met**

6.1 Do you need an enhanced Criminal Records Bureau check?	<b>Yes</b> <input type="checkbox"/>	<b>No</b> ✓ <input type="checkbox"/>	<b>N/A</b> <input type="checkbox"/>
6.2 Are you certain about implications arising from legislation? If not has contact been made with the designated officer (Chair of the SI Research Governance Committee)?	<b>Yes</b> ✓ <input type="checkbox"/>	<b>No</b> <input type="checkbox"/>	
Please add further comments if helpful to clarify the above took place in Guernsey, Channel Islands. The only appropriate legislation is the Human Rights Act.			

**Appendix 2**  
**Questionnaire for Guernsey School Teachers**

**A questionnaire about the management information systems you use at school**

A management information system can be used in schools for pupil and staff information, pupil registration, timetabling, assessment and reporting purposes etc. Although information systems may also cover the management of school finance, this element has been excluded from this questionnaire. This questionnaire has been designed to find out more about how these information systems are used. The questionnaire has 9 pages and contains sections about the information system used, about how you are learning to use the system, about information in your school, about teaching and learning, and about you. The required responses are a mixture of tick boxes and your comments. Please complete each page in the questionnaire.

The questionnaire has been designed as part of a research degree being studied at the University of Sussex. The results will be analysed to inform question 'Do Management Information Systems in Schools make any contribution to Teaching and Learning?'. The responses to the questionnaire are anonymous.

Thank you very much for taking the time to complete this questionnaire. I hope that the results will help me to improve my practice as a support staff for information systems in schools.

Please return completed questionnaires to

Lesley Webb  
MIS Co-ordinator  
Education Department  
The Grange  
St. Peter Port



## About the information system you use at school

A1

Please tick the box(es) to record any of the system(s) used in your school to manage pupil or staff information?

**You can tick more than one box if necessary**

<b>Information System</b>	✓
CMIS	
SIMS	
Research Machines	
Pearson	
Excel	
Access	
Other Pupil Report System <b>Please specify</b>	
Other Pupil Assessment System <b>Please specify</b>	
Other System <b>Please specify</b>	

A2

Where do you use the information system? Please tick the appropriate boxes to describe where you can access the information system.

**You can tick more than one box if necessary**

<b>Information system accessed in</b>	✓
Classroom	

On laptop at school	
On laptop at home	
In the staff room	
In the school office	
Other <i>Please specify</i>	

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**About why and how often you use the information system**

B1

Information systems can be used for many different purposes in schools. Please tick any boxes below that correspond to the types of use **you personally** make of the system, and indicate the frequency of use. \* For frequency please use one of the following categories

Daily	Weekly	Monthly	Termly	Annually	Other
-------	--------	---------	--------	----------	-------

Purpose	✓	Frequency*
Data entry about pupils (names & addresses etc.)		
Data entry about staff (names & addresses etc.)		
Registration of pupil attendance directly onto computer		
Registration of pupil attendance via Optical Mark Reader Registration Form		
Recording pupil special educational needs information		
Recording pupil behaviour issues		
Recording pupil assessment information		
Recording pupil examination entries		
Creating and editing pupil reports such as End of Year Report		
Creating and editing pupil examination result reports		

Creating and editing pupil data reports		
Creating and editing the school timetable		
Creating and editing teacher absence and staff cover required		
Creating and editing staff data about in-service training		
Creating and editing staff data about qualifications		
Accessing pupil data about registration information		
Accessing pupil data about special educational needs		
Accessing pupil data about behaviour		
Accessing pupil data about membership of classes or timetable information		

Purpose	✓	Frequency*
Accessing pupil data about home such as parents/contacts, telephone numbers, siblings etc.		
Accessing personal pupil data such as medical information, date of birth etc.		
Accessing pupil assessment or examination data		
Other <i>please specify</i>		

B2

Do you think that the information system is a useful tool in your daily work?

Please tick the appropriate box.

<b>The information system is a useful tool in my daily work</b>	✓
Yes	
No	

B3

If you ticked No at B2, what prevents the information system from being a useful tool in your daily work?

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.....

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.....

B4

What would help you to get more benefit from the system?

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.....

## About how you are learning to use the system

C1

Please tick the box(es) that describe how you are learning to use the information system in your school?

**You can tick more than one box if necessary**

How I am learning to use the information system	✓
Self taught	
Taught by a school colleague	
Attended a training course in school	
Attended a training course at another venue	
Other <i>Please specify</i>	

C2

If you have attended one or more training courses please describe the quality of the training provided.

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.....

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C3

Did you find that the training only covered the ICT issues (such as how the software works) or did it address the educational issues you were interested in?

.....

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.....

C4

Please tick the box that best describes how much support you have received in using the information system.

<b>Support received</b>	✓
None	
Hardly any	
Some	
Quite a lot	
A lot	
Other <i>Please specify</i>	

C5

Please tick the box that best describes how the support for the information system was provided.

<b>Support for the information system was provided by</b>	✓
A colleague at school	
A member of the senior management team but not the Headteacher	
The Headteacher	
A member of the Education Department ICT Team	
The MIS Co-ordinator or Assistant MIS Co-ordinator	
Other <i>Please specify</i>	



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C6

How would you rate the quality of the support provided?

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.....

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About information in your school

D1

Is there a School Development Plan for the use of information in your school?  
Please tick the box to indicate whether you know if such a plan exists.

Development Plan	✓
Yes	
No	
I don't know	

D2

If there is a School Development Plan for the use of information in your school who  
has contributed to creating the plan?

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D3

Do you think that the information held in your school information system is accurate  
and up to date?

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D4

Is there an expectation in your school that the information system can be relied upon?

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D5

Is the information system used only to complete returns to the Education Department?

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**About Information Systems and Teaching and Learning**

E1

Do you use the information contained in the information system to inform your teaching practice?

Please tick the box which best indicates if the information system informs your teaching practice (*if you are not a teacher please tick Not Applicable in this list*)

<b>The information in the system informs my teaching practice</b>	✓
Yes	
No	
Not Applicable	
Other <i>please specify</i>	

E2

How would you define the term '**Learning Outcome**'?

.....

.....

.....

.....

.....

E3

Can Learners access the information held in the information system?

<b>Learners can access the information held in the information system</b>	✓
Yes	
No	
I don't know	

E4

If Learners can access the information held in the information system, how is this accomplished?

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E5

How do you provide feedback to Learners about their achievements or progress?

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**About You**

F1

Please tick the box that describes your gender

<b>Gender</b>	✓
Male	
Female	

F2

Please tick the box that describes your role at school

<b>Role</b>	✓
Administrator	
Teaching Assistant	
Newly Qualified Teacher	
Teacher	
Senior Manager	
Headteacher	
Other (please specify)	

F3

Please indicate whether you would like to follow up this questionnaire with a further discussion interview about information systems in your school

<b>I would like to follow up this questionnaire with a further discussion interview about information systems</b>	✓
Yes	
No	

If you have ticked Yes, please write a contact telephone number or email address

.....

**Thank you very much for taking part in this questionnaire.**



**Appendix 3**  
**Questionnaire for Mr. Phil Neal, Capita**



Dear Phil

As I may have mentioned to you previously, I am currently undertaking an Education Doctorate degree with Sussex University. My thesis is an investigation of the contribution School Management Information Systems make to teaching and learning. Last year as part of my studies, I undertook a Systematic Review of the literature on Management Information Systems in Schools. I looked at close to 100 studies, both UK and international, which were in some way connected to MIS in schools. From this research several themes emerged:

#### **Synthesised findings of the Systematic Review**

##### Schools

- Achievement needs to be linked to feedback
- Administrators are often the MIS experts
- School culture and context are significant
- Schools are not benefiting from the system
- The concept of learning outcomes is fraught and complex
- The whole school needs to own the system
- Where systems are successful teachers are using them frequently and parents perceive the system outputs as high quality

##### Technology

- Data needs to be trustworthy

- National government requirements force reactive system development
- Not all the system capacity is being used
- Systems need to be easy to use
- The benefits of systems need to be interpreted
- There are not enough experts in management information systems
- Whole school networks are needed

#### Organisations

- Change Management
- Information can empower
- Leadership is crucial
- Training and support are crucial with a focus on education issues
- Using a system has a time cost versus benefit

As one of the original 'Gang of Four' developers of SIMS I am interested to hear your views on some of these themes. I would be grateful if you could answer the following questions:

## About SIMS

1. What motivated you to create SIMS?

## Schools

2. If Administrators are the MIS experts in schools, what implications do you perceive that has for the adoption of SIMS in schools?
3. Do you agree that schools are not benefiting from management information systems?
4. Why do you think schools are not benefiting from the SIMS product?
5. What do you think prevents the whole school ownership of MIS?
6. SIMS has been criticized by some school staff as being too complicated, (*not easy to use like Excel for example*), how do you respond to such criticism?
7. What needs to happen to ensure schools are using all the capacity your product is delivering?
8. Do you think there are enough cases where teachers are using MIS frequently and parents perceive the system outputs as high quality? How do you audit the perceptions of SIMS in the community?

## Technology

9. If national government policy forces reactive system development, how does that relate to your original intentions when creating SIMS?
10. What is your response to the claim that national government requirements now take precedence over teaching and learning, in the development requirements of SIMS?
11. Why do the benefits of management information systems need to be interpreted, what precludes these benefits from being overtly perceived?
12. Do you consider that there is a shortage of experts in school management information systems? How does this impact the development and deployment of SIMS?
13. If you agree with 12. how do you consider this shortage could be addressed?

### **Organisations**

14. Do you think you, (as a representative of Capita Education Systems), underestimated the amount of Change Management that schools would be required to undertake to successfully implement SIMS?
15. How much would you agree that School Leadership is crucial for management information systems to be well used in schools?
16. If training and support are crucial (with a focus on education issues), do you think the way that SIMS is supported in terms of local support teams, and the quality of training provided by these teams, have served schools well? Do you think training and support could have been better provided in a different way, if so how?

17. How do you think that schools can analyse the time cost versus benefit involved in implementing a school management information system?

*Thank you so much for your assistance in this research. The responses are for my research only, they are not for publication outside of my Doctoral Thesis.*

Appendix 4

Interview with Mr Rob Couch Guernsey Education Department

Interview with Mr Rob Couch, Head of ICT services, Guernsey Education  
Department

Interview Date: 6<sup>th</sup> September 2006

*Prior to the commencement of the interview LW had provided an outline sheet with the two main research questions and the questions she wished to put to RC. RC has also previously seen proposal.*

LW Thank you Mr. Couch for agreeing to this interview. Please could you read consent form and sign it if you agree voluntarily to participate in the research. You are able to withdraw from at any time.

***Mr Couch signs consent form***

LW *As the lead Education Officer for ICT, what motivated you to recommend the introduction of management information systems into Guernsey schools?*

LW *Do you consider that the system met your original objectives? Have these objectives been superceded?*

LW *Do you think the current system (SIMS) is fit for purpose? How could it be improved?*

LW *What factors do you think are crucial for the successful adoption of MIS\* in schools?*

LW *What do you see as the main benefits accruing to schools from the use of MIS?*

- LW *What do you see as the main benefits accruing to the Education Department from the use of MIS in schools?*
- LW *What role do you see MIS (in schools) has in the transformation of teaching and learning?*
- LW *Do students actually benefit from schools using MIS? In what ways?*
- LW *Is the use of MIS by schools simply a lever to get data amassed into the Education Department, putting pressure on schools to 'perform'?*
- LW *Do you think the data provided by a school MIS (such as Key Stage results, number of special needs students etc.) encourages the view that schools should be judged primarily on their numeric results, a comparison of inputs and outputs? What is your response to this?*
- LW *How would you respond to the claim that the reliance on ICT is a case of creeping industrial managerialism in schools?*
- LW *Can I just take you back to the question of the success factors for the adoption of MIS in schools? How much do you think this is dependent on training and support for schools, how much is dependent on school leadership, how much on the quality of the system?*
- LW *Thank you very much for your input to this research, is there anything else you want to add?*

### **Acronyms**

- MIS Management information system
- SIF Software interoperability framework



## **Appendix 5**

### **Interview Questions with Senior Leadership Team**

## **Interview with the Leadership Team of the Research School**

16:00 – 17:20

9<sup>th</sup> October 2006

The interviewer was Lesley Webb

Thank you very much for agreeing to this interview. I need to provide you all with consent forms, which I will do when I forward the transcripts of the interview.

LW

In this school there is a commitment to using MIS across the school for a variety of purposes. Why is that?

LW

Do you think the current system is fit for purpose, compared to your school expectations? What needs to be improved or changed?

LW

How has the use of MIS impacted upon teaching in your view?

LW

Do you think this impact (if found) is translated into student learning? In what ways?

LW

Do you consider that teachers regard MIS as a valuable and informing tool, or yet another thing that has been imposed upon them? Why is that?

LW

How would you respond to the claim that using MIS just helps your school to produce information about performance, rather than to support teaching and learning?

LW

How have you managed the change agenda in terms of the widespread adoption of MIS in your school? What has helped you to manage this change? What has hindered you?

LW

Have you found some departments or some teachers have adopted the new systems more enthusiastically than others? Why is that?

LW

Do you think that the use of MIS in schools is an example of '*creeping industrial managerialism*' of education?

**Appendix 6**

**Using a Management Information System as a Teacher and Tutor**

Using a management information system as a teacher and tutor at the Research  
School

### **Student Learning**

1. In terms of student learning how would you describe the role of a tutor?
2. Do you feel you have enough information to talk to students about their learning? Do you feel confident about talking to students about their learning?
3. Do you feel that you are just the postmen/women for student reports?

### **Teacher Learning**

4. How have you learned to use the MIS?
5. Is it preferable to learn to use the MIS at school, or at an external training venue? Why is that?
6. Do you find the MIS difficult to use? Please give examples
7. What data held in the MIS, do you find useful for your role as a tutor?
8. How do you use the assessment information held in the MIS?
9. How do you use the pupil data held in the MIS?
10. How do you use the attendance information held in the MIS?
11. How do you use the Yellis information?
12. Do you think using a computerised MIS is a normal part of teaching and learning?

## **Communication**

13. How do you feedback to students?

14. How do you feedback to parents/carers?

## **MIS**

15. What would make the MIS more useful for you as a tutor or subject teacher?

16. What prevents you from using the MIS fully?

17. What would make the MIS more useful for students?

18. Do you think the use of MIS and the volume of data about student attainment leads to a performative school culture?

## **Leadership**

19. Why do you think that the leadership team at the research school is so keen to encourage tutors and teachers to use the MIS?

**Appendix 7**  
**Questions for Administrative Staff**

## **Questionnaire for School Administrative Staff**

The Schools Information Management System is a management information system used in all Guernsey Maintained Schools and in many UK Schools.

This questionnaire is aimed at School Administrative staff. It covers systems issues, data issues and the administrator's own learning.

### **The System**

SIMS is upgraded at least 3 times per year, what problems arise for you as the school administrator, from these frequent updates?

Do you find you have to spend extra time and effort to keep the system working?

Do you often collaborate with your office colleagues to solve system problems?  
Why is that?

How else do you solve system problems?

Do you feel you will always need two systems, one electronic and one manual?

Do you feel the manual system is more reliable than the electronic system?

Do you reveal your SIMS password to other School Administrators?  
If Yes, why is that?

Would you prefer to use manual systems in the School Office rather than SIMS?

Is there anything else you want to say about the SIMS system?



## **The Data**

To your knowledge does SIMS hold the most up to date pupil data?

If data is updated annually from Data Checking Sheets, what happens to mid-year changes to data?

How does the school access data in an emergency if the SIMS system is down?

In your opinion can the school transfer all data to the computer and get rid of paperwork?

Is there anything else you want to say about the data held on the SIMS system?

**The Administrators**

Does using SIMS free you as an administrator from repetitive tasks? If Yes, Please give examples. If No please give details.

Has SIMS changed the way that you as an administrator work? If Yes, please give examples.

Are these changes for the better or for the worse? Why is that?

Does SIMS support your existing working practices or create new working practices for you?

How do you feel about that?

How long have you been a School Administrator?

How do you learn to use SIMS?

Have you attended SIMS training courses?

If Yes, Which SIMS training courses have you attended?

If Yes did you find the training courses helped you to learn the SIMS system?

If No, why have you not attended training courses?

If you have attended training courses, what could have improved the training for you?

Do you think you need more support to use SIMS? If Yes, why is that?

What do you think about the support provided by the Education Department, which helps you to use SIMS?

How would you like to see the support improved?

Does using SIMS make school administrators more efficient in your opinion?

Does using SIMS make administrators more productive in your opinion?

**Thank you** very much for taking part in the research project 😊

**Appendix 8**  
**Questionnaire to Parents**

## Questionnaire to Parents of Student Focus Groups

This questionnaire has some statements that you might agree or disagree with. For Questions 1 – 9 Please tick one of the boxes on the right e.g. if you agree tick the Agree box. For Question 10 please write your suggestions.

<b>Termly Reports</b>	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
You receive a report about your son/daughter's progress at school each term. Q1					
The use of numbers in the report makes it easy to understand. Q2					
It is helpful to see the information from the previous term. Q3					
It is helpful to see your son/daughter's Homework Completion reported on. Q4					
It is helpful to see your son/daughter's Homework Quality reported on. Q5					
It is helpful to see your son/daughter's Behaviour reported on. Q6					
It is helpful to see your son/daughter's Attainment reported					

on. Q7					
The report could be made easier to understand. Q8					
You would like to see changes made to the format of the report. Q9					
What changes would you like to see made to the format of the Termly report? Please write your suggestions below. Q10					

For Questions 11 – 14 Please tick one of the boxes on the right e.g. if you agree tick the Agree box. For Question 15 please write your suggestions.

<b>Tutor Reports</b>	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
You received a report about your son/daughter's progress at school from their tutor last year. Q11					
You found the tutor report informative. Q12					
It is easy to see what targets have					

been suggested for your son/daughter. Q13					
You would like to see changes made to the format of the report. Q14					
What changes would you like to see made to the format of the Tutor report? Please write your suggestions below. Q15					

<b>Roll of Honour Letter</b>	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
Your son/daughter has been included in the Roll of Honour. Q16					
You think the Roll of Honour motivates students. Q17					
You like the letter the school sends					

out to inform you that your son/daughter has been included in the Roll of Honour. Q18					
What changes would you like to see made to the format of the Roll of Honour letter? Please write your suggestions below. Q19					

For Questions 20 - 25 Please tick one of the boxes on the right e.g. if you agree tick the Agree box.

<b>On Reports Generally</b>	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
The information you receive about your son/daughter's progress at school is good. Q20					
The reports you receive from school are of a good quality. Q21					
The information you receive in school reports is consistent. Q22					
From the reports it is easy to see how your son/daughter can improve at school. Q23					



The reports you receive from school are easy to understand. Q24					
It is easy to communicate with school if you are concerned about your son/daughter's learning. Q25					

**Appendix 9**

**Meeting with Action Research School 26<sup>th</sup> September 2006**

### Meeting with the Research School Leadership Team 26<sup>th</sup> September 2006

Present \*: HT, DHT, DHT, AHT, Senor Teacher, Lesley Webb

At this meeting I presented proposal for an Action Research project to the leadership team. I was keen to emphasise the collaborative nature of this research project and the democratic nature of action research. I also discussed the ethical concerns of research and the importance of informed permission from participants.

We spent time discussing questions. The team suggested the first question could be amended to reflect their particular interests.

Do school information management systems contribute anything to teaching and learning?

Are the systems fit for purpose?

**Comment [H1]:** Compared to the school's expectations.

Does the training and support for such systems impair or aid their adoption?

**Comment [H2]:** Would staff take mis on again if it was initially badly taught, implications of training very important.

We discussed the language used in questions, the group was unfamiliar with the term *performativity* and I briefly described the concept, explaining that I also had not been familiar with it prior to undertaking a systematic review of the literature. We noted the differences between the Guernsey education system and the English education system, the lack of performance league tables etc. in Guernsey results in a different emphasis.

*However selection at 11 also makes the education system on the island different from many in England and that will have a bearing on learning LW.*

We then looked at methods, discussing the instruments suggested and whether these should be changed or added to. The HT commented that observation could

be useful, perhaps attending a target setting meeting. The DHT suggested looking at how lesson registration was being used.

## **Leadership team**

The leadership team suggested that they would like to be interviewed as a whole team initially, but with the option to have individual discussions if they wished to.

## **Teachers**

The leadership team will discuss with the staff which of them might contribute to the teacher interviews. As well as teachers they were keen to involve **non-teaching staff** in the research, seeing learning as taking place throughout the school.

## **Students**

I suggested to the group that I had considered interviewing students in Year 8 and Year 10 in the focus groups. These choices were based on Year 8 students being established in school and Year 10 having started their Options choices but not yet too deep into coursework deadlines etc. Whilst the interviews for school staff could be semi-structured I suggested that interviews with students would need to be structured. The group agreed and was happy with the choice of student group.

## **Parents**

A useful discussion about which parents/carers would be contacted and how, and how much input the school would have to the communication with parents/carers. The school sees this part of as particularly valuable in terms of evaluating their move to a new form of reporting. Therefore they will want to be closely involved with the instrument design.

It was proposed that the student focus group would be the deciding feature of who would participate in project. Students would be at the heart of and other participants would radiate from them see. Fig.1.

We agreed to meet again on 9<sup>th</sup> October 2006 to continue the discussions.

\* The names of the leadership team are for LW's notes only and will not be published in the thesis.

**Fig.1 Research Focus Groups**